Engineering Library

Report of Kentucky Sheet Metal Contractors' Meeting in This Issue.

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MAR 11 1924

AMERICAN ARTISAN and Hardware Record

Vol. 87. No. 10. 620 SOUTH MICHIGAN AVENUE, CHICAGO, MARCH 8, 1924. $2.00 Per Year.

THE SUPER-SMOKELESS FURNACE

Burns Soft Coal Without Smoke

A clean, sootless warm air heater that burns all grades of soft coal smokelessly—and other fuels with unequalled efficiency. Made by the Utica Heater Company.

Converts the heavy black smoke into clean, incandescent flames of great heating capacity. Size for size, the SUPER-SMOKELESS supplies more heat than any other successful furnace on the market.

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Send for complete information about the SUPER-SMOKELESS Furnace, the exclusive dealer proposition and the new Utica Heater Company pocket-size Catalog and Handy Book.

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UTICA, New York

218-220 West Kinzie St. Chicago

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Broadcasting Comfort

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NASHVILLE, TENNESSEE

NIAGARA FURNACES

Are Business Builders for the Progressive Dealer

MADE entirely of high grade clean pig iron throughout.

YOUR furnace business is bound to take rapid strides after you have installed several NIAGARAS.

The satisfaction they render to every user is the best kind of advertising for you. It is the uniform experience in the trade that every customer becomes a life-long booster of the "NIAGARA" and the dealer who installs it.

The Niagara Produces Profits as Well as Satisfied Customers

Write for our proposition today

THE FOREST CITY FOUNDRY & MFG. CO.

1220 Main Ave. **CLEVELAND, OHIO**

Also Manufacturers of Monarch and Peerless Furnaces

Founded 1880 by Daniel Stern

Thoroughly Covers the Warm Air Furnace Sheet Metal, Stove and Hardware Interests

AMERICAN ARTISAN and Hardware Record

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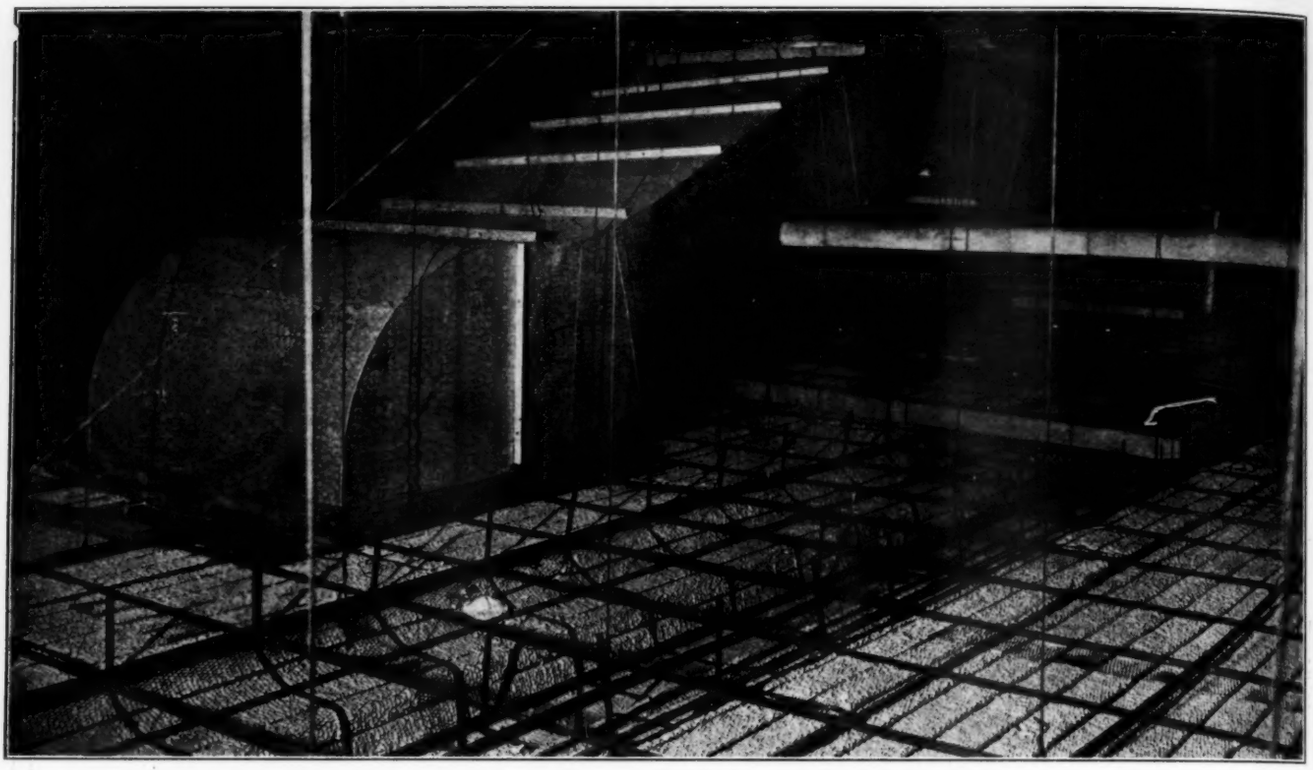
AN INVITATION

AMERICAN ARTISAN courteously invites and urges you to participate in the privileges and benefits of its Service Department. Any phase of the warm air heating and sheet metal industries or stove sales and window display questions may be profitably and instructively discussed in this department. If your problem is a knotty or technical one, submit it to the Service Department and secure the benefits of the opinions of other men. It is an exchange information department, and you are asked to relate your accomplishments and tell how you have surmounted difficulties. Wherever possible rough sketches or photographs should accompany the questions or suggestions, as they always make clear the points involved. Use this Service Department freely; it is yours.

ALPHABETICAL INDEX AND CLASSIFIED LIST OF ADVERTISERS, Pages 42-44-46.



Ventilating ducts over auditorium of new high school, Middletown, Ohio. Admitted to be one of the finest structures in the State. Ingot Iron used for sheet metal work and lath.

This Ventilating Duct is made of ARMCO-Ingot Iron

Wherever durability and economy are of major importance, ARMCO-Ingot Iron is the logical choice.

For sixteen years this iron has been used for roofing, siding, downspouting, gutters, window frames, lath, doors, heating and ventilating ducts; in fact, for every purpose requiring a high-grade sheet metal.

ARMCO Ingot Iron

Sheet metal workers like to use Ingot Iron because it forms so easily that the jobs can be done better at less cost.

Write for interesting booklet
"Building a Business with Iron that Lasts"

ARMCO
TRADE MARK
INGOT IRON

The American Rolling Mill Co., Middletown, Ohio

Your Furnace Sales Can Be Made At Least 20 Per Cent Larger in 1924

Editorial of the Week

DON'T blame anybody else for your failure—until you have made absolutely sure that the blame does not belong to you.

Don't cuss your competitor who gets the job away from you.

Find out what it really was that induced the buyer to give him the contract.

Probably the buyer will tell you that your competitor quoted a lower price, and in four cases out of five he will be telling a lie.

The man who has the idea that the lowest price always lands the contract is wrong in four cases out of five, at least.

If he was right there would be no copper roofs, for a prepared roofing can be laid cheaper.

If he was right, there would be no high grade furnaces on the market, because those that cost less to make can be sold at a lower price.

If he was right, there would be nothing but tin lizzies on the streets, because they cost less to buy than any other auto.

No—price is only one of the many considerations that enter into the making or losing of a sale.

Nevertheless, there are altogether too many men who really believe that price is the all-important factor in determining the placing of the order.

And it is the editor's purpose in writing this editorial, and others to follow, to drive away this mistaken idea and instill firmly in the readers' minds the fact that price is really of very minor importance in the making of a sale.

A certain manufacturer of warm air furnaces has built up a very profitable business selling direct to house owners. He sold in 1923 more furnaces than any three other manufacturers made.

But he did not sell this large number because his price was lower than anybody else's.

He sold them because he sent salesmen out to hunt for men who might buy them.

And these salesmen's salaries and bonuses were paid out of the profits from the furnaces that he sold at higher prices in most cases than were asked by the local installers.

But there is another side to the story of this same manufacturer.

Some of his salesmen make big salaries, it is true, but there are many cities where the so-called manager is changed very frequently—and for no other reason than that he cannot sell enough furnaces to make the branch a profitable one for his company.

And when you come to look into the underlying reasons you find that he has run into a bunch of live furnace installers who know that their time is worth very little while they are waiting for customers to come into their offices, but that it can be made worth a great deal by using it in canvassing.

A furnace installer in one of Chicago's suburbs had been doing jobs at about $140.00 for four-run installations and was making no progress. A manufacturer of a high grade furnace took him in hand and he is now selling four-run installations for $290.00 in the same suburb.

On the cheap jobs he had to work just as hard to make a possible ten dollar profit as he does now, but he nets $50.00 on the good jobs.

And keep this in mind:

As experienced furnace men, you know that a good installation of that size cannot be done for $140.00, nor for anywhere near that price.

So when we changed his policy he gave a real service to those suburbanites.

Get the right attitude toward your business, and your business will yield better and easier profits on your investment in money, time and thought.

Random Notes and Sketches.

By Sidney Arnold

Bill Cameron, of the Sunbeam furnace home force, has Scotch blood in his veins, but he enjoys a joke as well as anybody even if it deals with people of his kind, such as, for instance, the following:

A Scotchman was not feeling well and called on his family doctor, who looked him over and gave him some pills to be taken at bedtime. A bottle of whisky was also prescribed for his stomach's sake—a small glass to be taken after each meal.

Four days later Sandy called again on the doctor and said that he was feeling no better.

"Have you taken the medicine exactly as I instructed?" the doctor inquired.

"Weel, doctor," said Sandy, "I may be a wee bit ahind wi' the peels, but I'm six weeks ahead w' tha wuskey."

* * *

"Pope Leo" Brien, the white-haired International heater salesman, was enlarging upon the high imagination that some people show signs of and cited the following bit of conversation between two would-be tough colored boys:

Two Negroes were boasting of their prowess. Said one, boastfully: "Boy, Ah comes f'um a tough breed. Mah ole man done cut his nails wif an axe an' bresh his teef wif a file."

"Huh," replied the other, "ain't so tough. Mah ole man am a plumber, an' twice a week he done shave hisself wif a blow torch."

* * *

They were talking about the stinginess of some people when Charlie Nason, of "Milcor" fame, told the following story:

Seth Woodbury was a tight-fisted, hard-hearted old blacksmith, well known throughout the countryside as a man who would get every pennyworth of value out of those with whom he had dealings.

He was in partnership with his brother, Tom. One day the latter died and left all his property to Seth. Seth drove into town on the following Friday to have an obituary notice inserted in the local paper.

"There ain't no charge, be there?" he asked anxiously.

"Oh, yes, indeed," answered the clerk. "Our price is 4 shillings an inch."

"Crickey!" muttered the old man. "An' Tom six feet two!"

* * *

Some sheet metal contractors will appreciate this story, which was told by "Pop" Henninger, of the Osborn folks in Cleveland:

Jeff was engaged to do a job of painting for Mr. Mutt. After a while he came in, saying the job was completed, and asked for his money.

"But, Jeff, I wanted two coats on that building. I'll pay you after the second coat," said Mutt.

"You've got it," said Jeff. "I mixed the first coat with the paint for the second and put on both coats at the same time. Speed is my motto."

* * *

"Things people say do not always mean what you think," said "Garland" Jennings at Lansing, "such as, for example, with the fellow who thought he was quite a speech-maker.

" 'How was your speech received at the club?' asked one of his friends.

" 'Why, they congratulated me heartily. In fact, one of the members came to me and told me that when I sat down he said to himself that it was the best thing I had ever done.' "

* * *

Ralph Blanchard, George Carr and Bill Laffin had dinner together during a recent convention in Milwaukee, George having to foot the bill because of a disastrous result of a redouble in bridge.

It was a bitterly cold night and Bill asked Ralph what he would take to sit out of doors till dawn without stirring.

"Not for all the money in the world!" was the reply.

This gave George an idea. Said he:

"Let us send out and get three taxi drivers and ask them the same question."

They agreed. The first man brought in was an Englishman.

"What will you take for sitting out all night on the steps of the City Hall?" they inquired.

"Ten dollars, sir," he replied.

The next man was a Scotchman and he was asked the same question. Scratching his head, deep in thought, he said:

"How much will ye give me?"

Then the third man, an Irishman, had the same question put to him.

"I'll take a cold, yer honor," he answered.

* * *

Bob Kruse, the Indianapolis steel furnace manufacturer, tells the following story:

A Swede, on entering a small town railroad station in Minnesota, was attracted by the notice written in chalk on the bare wall: "You Can't Smoke in Here!" He immediately started a careful search over the whole room.

"What's the matter, Ole?" asked somebody. "Lose something?"

"No," answered the Swede, pointing to the sign, "Ay try to find out what's the matter with this room."

* * *

George W. Johanson, the big GiltEdge furnace salesman in Michigan, was waiting for an interurban bus in a country store when a Secret Service man entered.

"Mr. Perkins," began the Secret Service man, who was going through the countryside cautioning merchants against counterfeiters, "I have here a bogus ten-dollar bill and——"

"No, ye don't!" cackled the proprietor. "Ye don't git me to bite again, young feller; I bought a bunch last week from some feller, an' I had the goldurnedest time tryin' to get rid of 'em."

WFI, Philadelphia, Broadcasting! E. F. Glore Gives First of Series of Home Heating Talks.

"Getting the Most Out of Your Coal Bin" Is Subject of His Introductory Lecture.

THE recent radio broadcasting of a talk on heating problems by E. F. Glore, Treasurer and General Sales Manager of the Abram Cox Stove Company, Philadelphia, has proved to be an innovation with wonderful possibilities for the education of the consuming public and equally wonderful possibilities for the heating contractor.

Speaking from the broadcasting studio of Strawbridge & Clothier, Philadelphia, Station WFI, to an audience of thousands of householders who listened in from every state in the east and middle west, Mr. Glore chose as his topic "Getting the Most Out of Your Coal Bin."

The subject was timely and interesting, being delivered on February 27, just as the major portion of the country was emerging from a series of snow storms and icy blasts.

While Mr. Glore's talk, which is reproduced below, dealt with the proper methods of charging furnaces, boilers and ranges and regulating the drafts, he did not overlook the opportunity to suggest several times that the home owner consult with his heating contractor—"the person who knows how to advise competently."

Mr. Glore also emphasized the necessity of the householders having the heating outfit overhauled each spring.

When Mr. Glore was requested to broadcast the talk it was, of course, understood that the lecture was to be an educational one for the home owner and family man who has been staggering under the high cost of coal.

A little thought, however, on the part of those within the trade will bring forcibly to mind the limitless possibilities of the path being opened by Mr. Glore.

We all know the public is interested in getting more heat from less coal. Tons of magazine paper have been used in articles repeatedly. Practically every heater and boiler and stove company in the country has spent thousands and thousands of dollars advertising and advocating the overhauling of heating plants in the summer time.

And yet every heating contractor knows he has not been getting a satisfactory portion of this repair and parts business in the slow months—the warm months when people will not think of their next winter's heating needs.

E. F. Glore,
Abram Cox Stove Company.

Now, here comes a man of vision from the "slow" city of Philadelphia and puts the message directly into the ears of an audience numbering not a thousand or two, but, it is estimated by radio experts, numbering at least a hundred thousand.

Mr. Glore's talk follows. It is the first of a proposed series to be broadcast over the early spring months touching on every phase of home heating. Reprints have been provided and a quantity may be secured by any dealer interested in giving further publicity to this subject:

Mr. Glore's Radio Talk on Care of Furnace.

Spring is approaching. You have about finished a winter of comfort or discomfort in your home, depending entirely upon your knowledge and ability to properly operate your heating plant. Now is the appropriate time for you to consider and decide on your heating plans for next year, so that you will get the most heat at the lowest cost for coal.

Every heating system, like every individual, is somewhat different, which means if you are burning coal in a steam or hot water heating plant, warm air furnace, or coal range, you desire to get the best service out of the apparatus with the least expense in coal, as well as time and attention to the apparatus. You should, therefore, make a study of your own individual conditions along the following lines:

The main thing that contributes to the saving of coal is the proper balance between the boiler, furnace or range and the chimney. On the back of the apparatus is a smoke box of a certain size. This is the correct size for the boiler, furnace or range you have in your home. Therefore, the smoke pipe should be of the same size as the outlet in the smoke box. This smoke pipe should run straight from the boiler, furnace or range, inclining upwards if possible to the point where it enters the chimney.

What Is Proper Size of Chimney?

The chimney should be of the same size, never smaller, than the smoke pipe, and run straight up above the roof without any offset. Very often we think we have a good draft because the chimney seems to roar, but draft is dependent upon both this roar and volume, which means a large enough size to the chimney to produce proper combustion. For instance, water through a ½-inch hose nozzle will shoot a stream further than through a 3-inch hose nozzle; but in the 3-inch nozzle you get a greater volume of water through the ½-inch nozzle. So it is with a chimney—a small diameter of chimney will make the noise, but does not give the necessary volume.

Whatever the condition, the best way to get the most out of the coal bin is for some one individual in the house to take the responsibility of running the fires, so that they can become familiar with the conditions of those particular fires.

Care should be taken to have the smoke pipe removed at the end of the heating season, the bottom of chimney cleaned out, and the smoke pipe cleaned out, as the accumulation of soot closes up the opening, although very gradually, and the next season more coal is required to do the same amount of work, due to the restricted area in the smoke pipe and flue caused by this accumulation of soot.

As to the size of coal: Most people use the stove size because they have never tried the cheaper sizes, such as pea or buckwheat. And not every flue will properly take care of the smaller sizes, inasmuch as they pack closer in the firebox and do not permit of sufficient air getting through into the firebox to properly burn the coal. The way to try out pea or buckwheat sizes is to first mix it with the stove size coal, and gradually do away with the stove size, remembering that when you use the pea or buckwheat size you must keep a few inches of ashes on the grates to prevent the small coal falling through the grates. A little practice in this will result satisfactorily.

Spring Cleaning of Furnace Means Cut in Fuel Bill.

By combustion we mean, that when you put fresh coal on the fire everything looks black in the firebox, but shortly a blue flame breaks through and the fire begins to burn up. This is really getting a mixture of two parts of air with one part of carbon in the coal, to the extent that if this mixture is properly secured, the saving of fuel is possible. It is not too much to say that if the house owner would spend a few dollars every spring in having the heating apparatus cleaned out and overhauled, he would get very much better results the following winter season and save considerable on the coal bill.

We can understand what is meant by a five-cent piece, but it is difficult for us to imagine five cents' worth of coal being thrown on the heater, although we know that this coal means money. A little thought about the correct size of coal to be used and the proper size smoke pipe and chimney will enable almost any house owner to save one or two tons of coal per season and possibly burn the cheaper sizes of coal, which would result in a material reduction in the coal bill.

Usually when it comes time to recoal the fire, we shake the grates until we see a light under the grates. Then we put on fresh coal. This is the wrong thing to do. Before shaking the grates, throw on a little fresh coal and then do the shaking. This allows the fresh coal to fall down among the live coals and ignite quickly, and after it burns up then add the necessary amount of coal and the fire will come up in faster time and furnish the heat quickly.

After the house is warm and comfortable, the ashpit door should be closed or only opened slightly, and the check draft in the smoke box opened and the smoke pipe damper closed about half-way. By watching the fire you will soon discover how these doors and dampers should be set. Do not attempt to check the fire by opening the coaling door, as this permits coal gas to get into the house. As I said at the beginning, every chimney and heating apparatus is different and a study for a few days as to the proper way to set your draft door, check and damper will enable you to run the fire many hours without attention.

Remove Ashes Every Day.

Generally speaking, most people attend to the fire too often and shake the fire too vigorously, but one thing they overlook, and that is to remove the ashes from the ashpit every day or every time they shake the grates.

In my thirty years of experience in manufacturing and selling boilers, furnaces and ranges, I know of no greater waste of money than the millions of dollars spent each year for new grate bars to replace those burned out by carelessness or refusal to keep the ashpit clear of ashes.

Over four millions of dollars were spent last year by the house owners of the United States for grate bars. This amounts to the cost of 560,000 tons of coal, or a trainload of coal, consisting of 14,000 cars, reaching from Wilmington, Delaware, to New York, or from Philadelphia to Harrisburg, 105 miles. Now let me repeat that: because of the house owners' carelessness in not removing ashes from the ashpit, over four million dollars are wasted annually, which would pay for 560,000 tons of coal, which would mean a train of 14,000 coal cars stretching from Wilmington, Delaware, to New York, 105 miles.

Therefore, keep the ashes from the ashpit, as you will never need new grates unless the ashes are allowed to accumulate up to the bottom of the grates.

A thermostat or heat regulator will attend to the drafts automatically, and save its cost in a short time, besides giving you more uniform temperature with less attention, but the regulator will not put on the coal or remove the ashes.

Study the conditions of your individual heating plant and seek the advice of those whose business it is to know, and you will be pleasantly surprised at how much more you will get out of your coal bin during the next heating season.

Oil Burner Manufacturers Will Meet in St. Louis, April 1 to 3.

The first annual meeting of the American Association of Oil Burner Manufacturers will be held at the Hotel Chase, St. Louis, Missouri, April 1, 2 and 3, according to announcements recently made by the association. A program of speakers of national reputation on both industrial and domestic oil burners has been arranged, and the association has issued a general invitation to firms and individuals in allied industries to attend these meetings. Exhibits of oil burners and oil-burning equipment will be shown on the roof garden of the hotel.

What is the percentage of your sales, spent for advertising?

Lewis Says That Recent Trend in Ventilation Field Must Be Looked Squarely in Face.

Presents Arguments For and Against Smaller Units, with Special Reference to Unit Ventilator Idea.

THE recently published report of the New York State Commission on Ventilation, in which the adoption of the "Unit Ventilator" was recommended, has caused a great deal of discussion, and in the following we quote from an article written by Samuel R. Lewis, a well-known heating and ventilating engineer, which appeared a short time ago in the *Heating and Ventilating Magazine*:

Recent developments in the heating and ventilating field seem to indicate a decided movement away from the old duct systems. The public seems to demand something different. Attention is arrested especially by the report of the New York State Commission on Ventilation and by the adoption of unit ventilators by the New York City Board of Education.

Is this demand for something different based upon revolutionary engineering discoveries concerning failure of older arrangements and success of the new arrangements? Or is it an artificial demand due to selling pressure behind the proprietary new arrangements, contrasted with old arrangements which, being non-proprietary, have become stale through familiarity?

A discovery of an epoch-making and revolutionary nature in engineering is a very rare event. There are, however, very few products of human endeavor by which humans may not profit, by copying or avoiding. Any one of us can cast up a long list of inventions in heating and ventilating, each of which, acclaimed for a time as a world-beater, soon passed into deserved oblivion.

Smaller cities and inexperienced school boards are the great tryers-out of most of the new ideas in schoolhouse ventilation. Seldom having unbiased or experienced heating engineers and often having inexperienced or mercenary advisers, they are the prey of the special kind of stone or roofing? Doubtors, country school boards have always been the prey of salesmen of "systems."

The First Unit Ventilators.

In its beginning the unit ventilator was a very crude combination of easily procurable commercial units and its production and adoption involved good manufacturing and engineering principles.

Interestingly enough, the ventilating units when installed nearly always made friends. The ventilators were big, ugly contrivances placed with little regard to convenience or appearance in the outer aisles of class-rooms. They were noisy and dirty, and yet people liked them. The occupants felt better about ventilation if they could feel the air blasting in their faces.

So anxious to sell "units" were the promoters that much good engineering lore was ignored. For instance, in a basement gymnasium, half below ground, they would hang a number of ventilating units, like sore thumbs, along otherwise beautiful walls. They ignored the desirability of exhaust ventilation for places where odors originate. They thought corridors didn't need fresh air.

So slow is human nature in its adoption of any new thing, even though that new thing may be excellent, that it seemed to be necessary for the unit ventilator manufacturers to enter the contracting field and to sell systems, instead of units.

What a Unit Ventilator Accomplishes.

What does a unit ventilator accomplish which surpasses the results we obtain from a central system of ventilation?

It does not appear that air which has been warmed and conditioned by such a device in the class-room itself is especially different for human contact than air which has been warmed and conditioned by a similar device in an adjoining room.

As far as the air conditions within the room itself are concerned, there is a decided advantage in the point of entry—a vertical current of air at the line of the window sill. This point of entry promotes a favorable primary since it tends to whirl the entire room air content, gives excellent diffusion of the fresh air.

It is claimed for the unit ventilator, taking its air directly from the window or wall below, the window, that it is more cleanly than duct systems. Some well-cared-for units in buildings favorably located show cleaner rooms than some central duct systems in dusty neighborhoods. It is not the writer's experience that unit ventilators are particularly effective as air washers and no unit yet devised is clean, unless it is kept so by daily attention. Central duct systems can be arranged for as easy cleaning, with equal attention.

Factors Bearing On the Question.

The unit ventilator is apt to be much more noisy than the central duct system. Maintenance of the unit ventilator is reported to be much higher, due to the large number of small bearings to be kept oiled, and to the larger total area of metal subject to corrosion. First cost, for a large building, for unit ventilators, involving complicated piping and electric wiring, is nearly always higher than for a central duct system.

The space occupied in buildings by unit ventilators is the most expensive and valuable space there is, along the window side.

A unit ventilating plant for a large school is of great advantage over a central duct system if there is need to occupy different departments at different times. Intelligent design of a central duct system, with separate apparatus for various departments, will, nevertheless, usually accomplish the same desirable purpose, often at less cost than that of a single apparatus and nearly always at much less cost than that

of the many unit ventilators otherwise required.

It is very easy to arrange classrooms with points of air entry which give all the advantages of distribution inherent in unit ventilators, and this has been done by some designers for years. Air may be carried to outside walls between the joists of concrete buildings with the greatest facility and may be introduced at the window sills without obstructing the aisles.

Why "Adopt" Any Method of Ventilation?

The predominant reflection with reference to the adoption of unit ventilators by the New York City Board of Education is wonder that any such adoption should have been necessary. Do we hear that a board of education has adopted some speless it is advised by its architect who suggests the kind of stone and the kind of roof which will be most fitting for each design and location. The architect is seldom limited to any specific material. He is rarely told, for instance, that all buildings must be built of stone.

It may be that in certain metropolitan schools, on high-priced land, it will be better and less costly to use unit ventilators for class rooms. In such buildings, many stories high, the conventional flues from basement supply-fans are exceedingly troublesome, taking up much valuable space. Under such conditions the advisors of any board of education should be able to specify unit ventilators without requiring circumscribing orders so to do.

Any competent engineer should use the tools and devices of his profession to the best advantage of his client. In the writer's own experience, he has found cases where unit ventilators have filled the requirements in a highly satisfactory manner, and other cases where central supply systems have proved preferable. Why not use that which best serves?

Trend Toward Smaller Units in All Heating and Ventilating Practice.

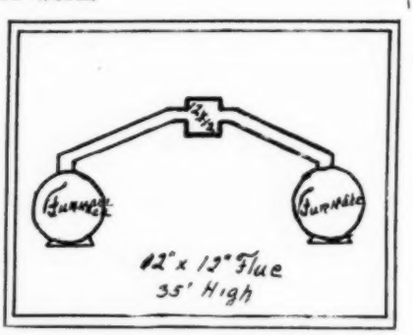
There is a decided trend in all heating and ventilating practice towards smaller units, shorter ducts and more of them. A given volume of air or power does not cost much more as to investment and operation, when handled by ten fans and electric motors, than when handled by one fan and one electric motor. It is easy to save far more in the reduction of costs of ducts than in the increase in the cost of apparatus. I do not think this trend towards smaller units means a revolution in school-building ventilation. It is rather a normal and logical development following universal electric service.

We must not lose sight of the tremendous value of unit ventilators for old buildings and small installations where they can often be installed at less cost than that of any other arrangement giving equal service.

Any good engineer will devise for any building which he is equipping, a ventilating plant using unit ventilators, central-duct supply systems, and exhaust systems, as the conditions may indicate, and few buildings will be found in which an intelligent combination of all these types may not be used to advantage.

Will These Two Furnaces Operate Successfully as Now Situated?

Here is another furnace installer in trouble with an installation, a diagram of which is submitted herewith. Some of you installation sharks get out your pencils and go to work.



The inquiry is made by Edward T. Carpenter, Louisville, Kentucky, whose letter is as follows:

To American Artisan:

I have mailed you a drawing and shall appreciate it very much if you will be so kind as to give an opinion as to whether or not these two furnaces shown on the drawing will perform in a single flue, or must there be a separate flue for each furnace? The size of the flue is 12 x 12 inches, and it is thirty-five feet high. The diameter of each smokepipe will be eight inches and approximately five feet long for each furnace.

E. T. Carpenter.
Louisville, Kentucky.

A consensus of opinion of heating engineers so far shows the trouble with the layout to be that the openings should not be diametrically opposite to each other.

If a "Y" of the two smoke pipes is made, the end fitting into the chimney being twelve degrees in diameter, the job will be O. K.

If the furnaces are set up as now planned, it will be found that one of the furnaces will not operate

Here is a good chance for some other members of the warm air heating industry to get busy and exercise their genius.

Grand Rapids Sheet Metal and Heating Engineers Have Hearty Co-operation of Their Ladies.

The regular monthly meeting of the Grand Rapids Sheet Metal and Heating Engineers was held at the Chamber of Commerce on Tuesday evening, March 3rd. It was a dinner meeting and also Ladies' Night. Following the dinner the meeting was called to order by President Harry Rhodes, who explained to the ladies some of the activities of the organization. He also told them about the Complete Home Show at which the Association has arranged to have a booth. This booth will be occupied jointly by the local and state associations to expound the Guaranteed Installation plate and also the Michigan Standard sheet metal products which are sponsored by the state body. The booth will be in charge of F. E. Ederle, assisted by several local members.

A short talk was given by F. E. Ederle explaining the plans for the summer outing to Quebec. He also spoke of the Lansing Convention explaining the important part taken

by the Grand Rapids members in making this the greatest meeting ever held by the organization.

By a unanimous vote it was decided to hold the next meeting at the Chamber of Commerce and to have a dinner meeting with the ladies invited. The expense of the meal is to be paid by the Association. Five reels of moving pictures of the trip to Quebec will be shown at this time.

At the close of the meeting the members and their families went to the Empress Theatre where a splendid vaudeville program furnished a fitting finish to a very pleasant evening.

New Hart & Cooley Catalog Showing Increase in Free Air Areas of Floor Registers Off Press.

The Hart & Cooley Company, New Britain, Connecticut, manufacturers of Wrought Steel Warm Air Registers, have issued a new warm air register catalog which from the standpoint of physical make-up ranks high indeed. It bears all of the earmarks of the latest in lithography.

The outstanding feature of the new register, as explained on the fore leaf of the catalog, is the increase in capacity for the easy movement of free air, without sacrificing strength and durability in the register face. An increase of 25 per cent in free air area has been accomplished on the new floor registers and 40 per cent in the baseboard types.

The catalog is a marvel of workmanship, containing twenty-four pages, and the illustrations and descriptions are so arranged as to make for clearness and easy comprehension.

The tabulated list prices are also well arranged.

A very clear and comprehensive method has been used in explaining how the increase in free air area has been effected.

A very attractive folder in the true H. & C. style accompanies the catalog, entitled the "Hole" Story.

The four features of the catalog are: Increase in free air capacity, additional sizes, changes in list prices, and an enumeration of the stock finishes.

For full particulars write at once.

New American Self-Cleaning Furnace Circular Unusually Descriptive.

The American Foundry & Furnace Company, Bloomington, Illinois, have released a circular describing their new American Self-Cleaning Furnace, series 600.

This circular illustrates the furnace to be of the open dome type, with the radiator so constructed that the soot and dirt cannot collect up-

Self-Cleaning Furnace.

on it. All heating surfaces are said to be in direct contact with the flames. The furnace is also extra heavy and a fuel saver.

The products of the American Foundry & Furnace Company are well known in the heating world and the new issue furnace of the company is indeed more than up to standard.

Write for circular and full particulars.

Sets $5,000 as Limit for Earned Income.

It has been pointed out here before that the definition of the term "earned income" in the original draft of the next tax bill was inadequate, as it included only salaries and professional earnings, leaving the farmer and merchant out of account. Efforts are now being made by the Ways and Means Committee to meet this situation. One proposal was made to add to the original definition the stipulation that earned income meant "a reasonable compensation" for personal service when the income is derived from both service and capital. This raises the question of what constitutes a "reasonable" compensation. Other proposals have been more arbitrary, but also more practicable from the viewpoint of administration. The committee decided to designate all incomes below $5,000 as earned. This is not scientific, but it seems sensible and has the advantage of meeting objections which have been raised to taxing the incomes of elderly persons derived from lifetime savings more heavily than the salaries of young and able-bodied citizens. While the committee is disposed to classify everything below a certain figure as "earned," it is also inclined to designate everything above a certain sum as "unearned." Opinion seemed to favor $20,000 as the maximum that any one can earn. This is likewise arbitrary and unscientific, but it at least has the merit of greatly simplifying the administration of the law.

What About the Careless Person Who Causes Fire Loss?

The justice of penalizing individual carelessness when it results in fire damage to the property of others is effectively argued in the following brief bulletin, issued by the Industrial Commission of Wisconsin:

A crook robs a national bank of one million dollars. The entire police power of the state and nation are put to work to apprehend him.

A man deliberately sets fire to a grain elevator in which one million dollars' worth of grain is stored. Some fire marshal's deputy, alone and unaided, investigates this fire in the hope of discovering sufficient evidence to bring the guilty man to trial before a jury strongly prejudiced against circumstantial evidence.

It pays to advertise—regularly.

Constructing Roofs on Large Residences and Schools Having Dormer Windows.

O. W. Kothe Shows How a Convenient Pattern Can Be Worked Out Whenever the Necessity Is Met With.

Written Especially for AMERICAN ARTISAN by O. W. Kothe. Principal, St. Louis Technical Institute, St. Louis, Missouri.

ON NEW construction work for the larger residences, as well as some schools, hospitals and other buildings, dormer windows are met with quite often. Some are made one design and others another, so in this case we have a window with a segmental top, with a roof line as A-B. Now, our purpose is to lay off the patterns for the roof that fit against the main roof, also the flange on the roof and the moulding miters.

We first detail the front elevation; in practice the roof line 1-5, which is described from the center X, is sufficient. Then we draw the roof line A-B and from each point as 1-2-3-4-5 in the front elevation we project over horizontal lines to intersect the roof line as in points 1′-2′-3′-4′-5′. This is all that is necessary for developing the roof patterns. To set out the pattern for the covering we pick the girth from the front elevation, as from 1 to 5, and set it off below the side elevation, as 5-5; drawing stretchout lines horizontally, and then from each point in the roof line, as 1′-2′-3′, etc., we drop lines to intersect those in stretchout of similar number, as point 1′-2′-3′ shows. This enables sketching in that curved miter cut line and will make the valley between the main roof and the dormer window.

Now to lay out the flange that fits on the roof and joins to the covering, we pick the spaces from the line A-B, as 1′-2′-3′-4′-5′, and set them on the center line over front elevation, as 1-2-3-4-5. Through these points we draw horizontal lines and then from each point in elevation we erect lines to intersect those in the same number in pattern; at the intersections we sketch the curved line which is the outline for the valley. Ordinarily a corner of metal, as 5-s-r, is allowed so as to pass underneath the side ogee mould and prevent water from running under. This roof covering and flange is assembled as shown by the middle seam detail above side elevation.

Now, where the moulding must be developed, we have two different patterns in the side, that is, a square miter and a butt miter. So we draw the full size detail as shown above side elevation and divide all curved lines in equal spaces, numbering each point and bend, as from 1 to 10. Then we draw the line a-b, which represents the roof line A-B, and from each point in the detail we extend horizontal lines to intersect this roof line. We next pick the girth from the detail and set it off as in pattern, drawing horizontal stretchout lines and then from each point in the detail, as well as in the roof line a-b, we erect lines to intersect those of similar number in stretchout. Through these intersections we draw lines and it gives us the miter cuts to fit in the position required.

In this case we consider the side mould of the window as a normal profile, since that is the mould where the normal section is designed to, while the front mould taking care of the segment will be modified, and as this is curved, and must be hammered or rolled, the end miters are therefore fit to the side miters. This latter is always more or less of a cut and fit proposition where a curved mould fits onto a straight mould. The pattern for the blank segmental mould is determined by drawing the radius line through the ogee, somewhat averaging it up until it intersects the horizontal center

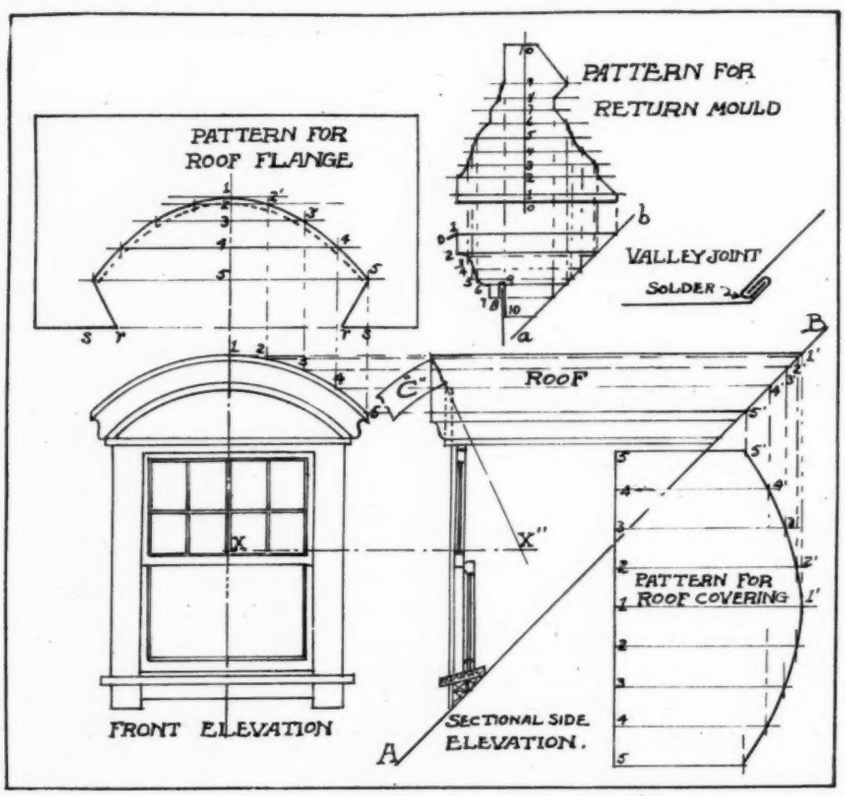


Illustration Shows Pattern for Dormer Window Roof as Worked Out by O. W. Kothe.

line extended from X of front elevation, as at X″. This, then, is the radius for describing the front segment of ogee. Its length would be made equal or a little longer to the girth spaces used for the roof, as from 1 to 5. While the upper fillet and the lower fillet adjoining the ogee would be straight strips cut to the arc described from X of front elevation. Edges for soldering the various pieces together must be allowed extra.

Correction in Kothe Article February 23rd Issue.

In answer to an inquiry written by John F. Aingworth, Cleveland, Ohio, regarding the lettering of the Kothe article appearing in AMERICAN ARTISAN for February 23rd, page 22, Mr. Kothe makes the following comment:

The correspondent, John F. Aingworth, Cleveland, Ohio, is correct, in that the dictation has been misprinted where the D and the B were interchanged in the problem of pipe development in your February 23rd issue.

When the circumference points B and E are established, place the steel square in the position shown, so as to make a right angle line as E-B-G. Then bisect the distance C-G as in point H. Then trace in the sheer line A-H-B.

Next pick the height as H-D, and set as B-E and A-F, and sketch in this camber line, which gives the desired curves. It is always well to run a zig-zag rule along these camber and sheer lines to see that their girths are correct, and that the camber or sheet does not lengthen the true girth too much.

Iowa Sheet Metal Contractors' Convention in Fort Dodge Should Be Well Attended.

The Fine Program of Business and Entertainment Prepared by the Local Committee Calls for Large Attendance.

FORT DODGE, Iowa, is going to be a fairly lively place on Thursday and Friday, March 13th and 14th, for the Iowa Sheet Metal Contractors' Association will hold its fourth annual convention at the Wahkansa Hotel in that city on those dates.

The following invitation has been sent out by the Fort Dodge Local committee, composed of F. T. Connolly and J. E. Carlson, and if you have ever had anything to do with any affair run by a combination of Irish and Swedes, you know that a "lively (lovely) time will be had."

"O ye faithful, give ear! You are respectfully requested, cordially invited and earnestly urged to be among those present at the fourth annual convention of the Iowa Sheet Metal Contractors' Association in this neck of the woods on March 13-14. Lo, these many moons have we labored in preparation for your entertainment, Hizzoner, the Mayor, has agreed to leave town on those dates, only blind policemen will be on the force and the key to the city—we never had one. The people within the confines of our bailiwick have pledged themselves to be with us in thought, in spirit and in action during your stay.

"Entertainment? Yes, we will dance with you, eat with you, and—let you sleep by yourselves, if you have any time to waste that way. Mutt and Jeff will take you down to the river to see the ice go out. Oscar will introduce you to the Cardiff Giant. Bill Penny will show you a picture of his Jersey cow. This is no bull. We've raised our local dues and paid our taxes, so there's nothing to fear, be of good cheer, and be here. Selah!"

The program which has been prepared indicates that there will be plenty of food for thought and also enough of the lighter forms of entertainment to make the two days profitable and pleasurable:

Thursday, March 13, 1924.

8:00 a. m.—Registration in Chamber of Commerce rooms.

Distribution of badges.

11:00 a. m.—Convention called to order by R. T. Northrup, President of Sheet Metal Contractors' Association of Fort Dodge.

Address of welcome, C. V. Findlay, Mayor of Fort Dodge.

Response, N. A. Lichty, President Iowa Sheet Metal Contractors' Association.

Question box.

1:30 p. m.—Address, "Equipment for Business," E. L. Seabrook, Secretary National Sheet Metal Contractors' Association.

Address, "Horsehead Zinc for Sheet Metal Work and Roofing."

Address, "Advertising," R. N. Friend, Sioux City, Iowa.

Ten-minute Talks—"Collections and Credits," O. W. Ilten, Cedar Rapids, Iowa. "Service," John G. Wright, Waterloo, Iowa.

Appointment of committees.

Do as you like till 6:30 p. m.

6:30 p. m.—Banquet, Wahkonsa Hotel Ball Room, furnished by the Jobbers and Salesmen's Auxiliary.

7:30 p. m.—Entertainment. Blair Quick, Master of Ceremonies.

Friday, March 14, 1924.

9:30 a. m.—Association meeting.

Address, "Your Association," E. I. Dodd, Sioux City, Iowa.

Secretary's report.

Report of Board of Directors.

General discussion.

12:00 m.—Luncheon, Chamber of Commerce dining room.

1:30 p. m.—Ten-minute talks: "Cost Records and Estimating," W. R. Backman, Des Moines, Iowa; "Overhead," J. E. Johnson, Sioux City, Iowa.

Treasurer's report.

Report of committees.

New and unfinished business.

Election of officers.

Selection of next convention city.

Program for Visiting Ladies.

Thursday, March 13—8:00 a. m.—Registration and distribution of badges.

2:00 p. m.—Theater party. Meet Chamber of Commerce lobby.

6:30 p. m.—Banquet, Wahkonsa Hotel Ball Room, guests of the Jobbers' and Salesmen's Auxiliary.

Friday, March 14—12:00 m.—Luncheon, Chamber of Commerce dining room.

1:30 p. m.—Visit to interesting places.

The visiting ladies are invited to attend any or all sessions of the convention.

To the Ladies.

The Sheet Metal Contractors are coming to town,
With a smile on their face, but ne'ry a frown.
We want their wives to come looking the same,
'Cause what's a convention without us dames?
The 13th-14th of March is set as the date.
Won't you come early? Try not to be late.

MRS. ROBERT NORTHRUP,
MRS. F. J. ROSIEN,
MRS. S. T. CONNOLLY,
Committee.

Wants Two Ways to Make Zinc and Copper Balls.

To AMERICAN ARTISAN:

Please publish in AMERICAN ARTISAN the two ways of making zinc and copper balls.

Yours very truly,
SUBSCRIBER.

February, 1924.

Seth Raymer, Lena, Illinois, Enrolls in Sheet Metal Course at Carnegie Tech.

Seth Raymer, only son of J. S. Raymer, Lena, Illinois, believes in perfecting himself in all lines of the sheet metal man's trade.

On February 1st of this year Mr. Raymer and his young wife went to Pittsburgh, Pennsylvania, where he is taking an advanced course in sheet metal work at Carnegie Tech.

After graduating from the Lena High School, Mr. Raymer completed a course of study in the International Correspondence Schools, Scranton, Pennsylvania, working during the daytime at his trade and studying at night.

Seth went overseas with the volunteers and was also a member of the Army of Occupation in Germany. After he came back, he resumed, as Horace Greeley said, with his father in the furnace and sheet metal business.

The young couple will return to Lena, Illinois, in time for Mr. Raymer to help with the fall rush at I. S. Raymer & Son, furnace and sheet metal work.

In February, 1925, Mr. Raymer will again return to Pittsburgh to finish the course that will give him the best knowledge that a sheet metal contractor can possess.

Mr. Raymer has as his motto: "What is worth doing at all, is worth doing well. Know your business and the job seeks you instead of you seeking the job."

Wisconsin Sheet Metal Contractors Will Hold Milwaukee Convention March 11 and 12.

George Harms and Paul F. Brandstedt Among Speakers—Republican Hotel Will Be Headquarters.

THE Wisconsin Sheet Metal Contractors' Association will convene at the Republican Hotel, Milwaukee, Wisconsin, Tuesday and Wednesday, March 11 and 12.

Some excellent speakers have been secured and it behooves every sheet metal contractor to present himself and absorb as much of the good things as possible.

The program will be carried out as follows:

Tuesday, March 11.

Meeting of the Board of Directors.
Registration and distribution of badges.
Address of welcome, L. C. Whittet, Association of Commerce.
Response, Otto Geussenhainer.
Report of Credentials Committee.
Reports of officers—President, Secretary, Treasurer.
Report of Auditing Committee.
Roll call of officers and committees.
Reading minutes of previous meeting.
Committee reports.
Unfinished business.
Communications.
Collection of dues.
New business.
Proposal and election of new members.

Tuesday Afternoon.

Equipment for business, A Practical Exposition and Survey, by E. L. Seabrook, Philadelphia.

Live Sheet Metal Topics, George Harms, Peoria, Illinois.

Start Something Hour. All those present should participate.

Banquet at 7:00 p. m., Convention Hall.

Wednesday, March 12.

A paper, "Just Compensation," submitted by Paul F. Brandstedt, of Washington, D. C. Read and commented upon by O. Guessenhainer, of Sheboygan, Wisconsin.

"Ventilation," by R. A. Small, Ventilating Engineer.

Question box.
Discussions in general.
Deposit questions in box.

Wednesday Afternoon.

The Present Labor Condition, by Leon B. Lamfrom, Milwaukee.

Proper Air Conditions with Warm Heat, by Prof. E. A. Stewart, University of Minnesota, St. Paul, Minnesota.

Question box.
Discussions in general.
Election of officers.
Naming of convention city.
Deposit questions in box.

Is AMERICAN ARTISAN Kept on File? We'll Say So!

The following letter is in answer to an appeal for a back issue of AMERICAN ARTISAN from T. B. Callahan, Akron, Ohio:

To AMERICAN ARTISAN:

I wish to thank you for inserting my request for a copy of AMERICAN ARTISAN, December 9th, 1922, in your columns.

I received copies of this issue from four states.

T. B. CALLAHAN.

Akron, Ohio.

Brabazon Knows He Would Be Missing Something Without Artisan.

To AMERICAN ARTISAN:

In regard to that renewal, I should say you will get it, as the Warm Air Special alone is worth the subscription price.

I should certainly feel that I was missing something if I should miss an issue of AMERICAN ARTISAN.

Yours very truly,
W. H. BRABAZON.

Beloit, Wisconsin.

Sheet Metal Contractors of Kentucky Hold First Annual Convention at Louisville.

President Pierpoint of the National Sheet Metal Contractors' Association Addressed Assembly on Compensation Insurance.

THE state of Kentucky, as every one knows, is in the midst of that southern territory so well known for its horse racing and genuine hospitality. In view of this, it is not surprising to learn of the success of the first annual convention of the Sheet Metal and Roofing Contractors' Association of Kentucky, held at Louisville last week.

President John V. Kemper called the convention to order.

Huston Quin, Mayor of Louisville, welcomed the members and congratulated them on the wise step they had taken in forming a state association. He said that many benefits could be derived from meeting together and discussing the problems common to all, and as the result the members would be prepared to do better work in the future. "Every customer," said he, "or client is an opportunity to make a friend, and in turn, every friend a customer and every visitor a booster of Louisville."

He finished his address by inviting the out-of-town guests back to the home-coming celebration in June.

The second address was made by Richard Bean, President of the Louisville National Bank, who spoke on unpleasant conditions which arise between banker and customer. The subjects of his discussion were: Do not put your surplus money in one investment; best investments go wrong sometimes; do not let your vanity get ahead of you in your dealings; stick to your own line of business; expand your own resources; keep your capital in a liquid shape—two dollars in liquid assets for every one dollar that you owe. He said that if you conceal your weaknesses when you are discussing finances with your banker, you will never get 100 per cent efficiency.

During the reading of the communications by the Secretary, a telegram was read from John J. Beard, Lexington, and letters from the following: Secretary of the Sheet Metal Contractors' Association of Birmingham, Alabama; Fred J. Rasch, Covington; Julius Gerock, Jr., National Association; John Casey, Shelbyville, and A. E. Lawrence, Mt. Sterling.

Julius Gerock, Jr., expressed the good wishes of the St. Louis Asso-

John Pierpoint, National Sheet Metal and Roofing Contractors' Association.

ciation and also those of the Missouri State Association. He also told an amusing story about a man in Mobile, Alabama, who had a pain and was advised to take Hoosis Bitters. The man did. He is well known.

At the afternoon session President Kemper introduced John Pierpoint, President of the National Association of Sheet Metal Contractors. President Pierpoint told of conditions in Virginia, North Carolina and Georgia, and offered good advice for the elevating of the trade. He admonished them to forget all this talk about tinners and to remember that they were sheet metal men now. He wished them to put the contracting sheet metal business in the arts and not in the trades.

The President's, Secretary's and Treasurer's reports were then heard and approved.

President Kemper recommended that the convention elect a delegation to attend the national convention in Washington, D. C., in June and the recommendation was accepted.

The Secretary then read the minutes of the organization meeting held December 11, 1923. A motion by William T. Mehler, and seconded by Charles W. Schott, was made to approve the minutes of the previous meeting. After this the Secretary read the report of the Directors' meeting, held January 15, 1924.

Charles W. Riebel, B. J. Jacobs and Sylvester Adelberg then addressed the assembly and assured the association of their hearty support.

The following men were then appointed by the President to the committee on officers' reports and audit; Fred W. Rasch, Covington; J. T. Mattingly, Owensboro; William Daschback, Louisville.

A resolution was passed to thank Richard Bean for his splendid talk. Mayor Huston Quin was also thanked by resolution.

The men appointed by the Chair on the resolutions committee were as follows: Louis Heck, Louisville; Albert Laub, Owensboro; John F. Cartwright, Bowling Green.

William Daschback moved (seconded by Louis Birkel) that the Chair appoint a grievance committee. The motion carried.

J. E. Merrick moved (seconded by H. Daringer) that a committee on by-laws be appointed. The President then appointed the following: J. E. Merrick, Louisville; Fred Schupp, Louisville; Louis Stottman, Shepherdsville.

Thursday morning the session was opened by Harry G. Evans, of the Louisville Convention and Publicity League, who gave a very interesting talk on organization. He recalled being at the organization meeting of the Sheet Metal Roofing Contractors' Association on December 11th and said that he was very proud that Louisville had been chosen for their first convention, but he advised the members, for their own benefit and for the benefit of the association, to take their next convention to the eastern part of the state and then to the western part, in order to reach members and prospective members who did not come to Louisville at this convention. He said that the united efforts of all the cities helps each city.

The President appointed the following men on the grievance committee: William Nieder, Louisville; Albert Laub, Owensboro; Henry Daringer, Louisville.

The committee on resolutions recommended that seven members be appointed on the legislative committee instead of five. A motion was then made by O. E. Hutchison and seconded by William Daschback that the President appoint seven on the legislative committee. The following named men were selected by the President: J. J. Breslin, Frankfort; John J. Beard, Lexington; J. F. Cartwright, Bowling Green; F. J. Rasch, Covington; J. E. Merrick, Louisville; J. T. Mattingly, Owensboro; J. W. Harvey, Ashland.

This was followed by a forceful talk on Lien Laws by J. E. Merrick.

John Pierpont delivered a very interesting address on "Compensation Insurance," pointing out the wide variation in rates in the various states, and advising that the association join with the other state associations in getting Congress to take charge of the rate making on insurance and that the laws in the different states be made to conform thereto.

A motion was then made by R. A. Huncilman, and seconded by Mr. Stiglitz, to elect delegates to the national convention. This motion was carried and J. E. Merrick, O. E. Hutchison and John F. Cartwright were named as the delegates from the Kentucky Association to attend the Washington convention of the national association in June. The alternates were Albert Laub, J. T. Mattingly and Fred Schupp.

Julius Gerock, Jr., extended an invitation to the delegates to come by way of St. Louis on their way to the national convention .

There being no further business before the meeting, adjournment followed, so that the members could go to the luncheon prepared for the delegates at the Sheet Metal Supplies Company warehouse by John Heckel and his able assistants.

Officers of the Association are:

President—John Kemper, Louisville.

Vice Presidents—M. Ridgeway, Mayfield; Henry Glascow, Louisville; R. A. Huncilman, New Albany.

Secretary—O. A. Hutchison, Louisville.

Treasurer — L. M. Harping, Louisville.

H. A. Beaman, with Haynes-Langenburg Manufacturing Company, St. Louis, tells what happened at the luncheon.

"There were about seventy-five sheet metal contractors present at the luncheon," said he.

"Following the luncheon, story telling and singing were indulged in until 2 p. m.

"One of the St. Louis Twins made his train, which left at 9:55 p. m., without an escort. President Pierpoint and myself remained over until Friday, in order to check up and see whether or not all the out-of-town boys got the right trains for their homes, and we are glad to report that all was well.

"A motor trip was taken in the afternoon over the city, visiting the various points of interest.

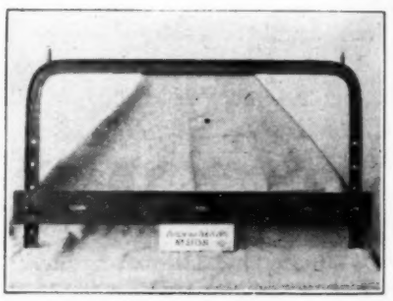
" 'Dick' Huncilman, New Albany, Indiana, was Johnny on the spot. He belongs to the local Sheet Metal Contractors' Association and is Third Vice-President of the Kentucky State Association. 'Dick' did very well, as he attended all of the sessions and went home at 5:30 p. m. each day. You know it's pretty hard sometimes for a man living so close to a convention city to go home at night.

"Speaking of entertainment, Charles W. Riebel is some leader. What Charlie don't think of is not worth mentioning."

Wendel Invents Light, Durable Ladder Support for Erecting Gutters.

Sheet metal men have experienced no little difficulty in managing a ladder while erecting eave troughs. The difficulty arises when it is desired to keep the ladder from crushing the trough under the weight of the man on the ladder.

This state of affairs has given rise to the production of numerous inventions conceived especially for this purpose, one of which we published on page 28 of our January 19th issue and hereinafter we are showing another, but of an entirely different nature, made by E. W. Wendel, Hinsdale, Illinois.



Wendel Ladder Support.

Mr. Wendel writes as follows:

To AMERICAN ARTISAN:

We raise the ladder against the edge of the roof. Then the man operating the ladder goes up and sets the support against the ladder, with the teeth fastened into the roof. Sometimes he fastens the strap around the upper rungs of the ladder, but usually this is not necessary, as the weight of the ladder is generally sufficient to hold it in place.

The worker then goes down and gets his gutter under the ladder, lifts it up and solders it in place.

Mr. Wendel explains that formerly he had a provision for fastening the support to the ladder, but he found that for ordinary sheet metal work it was not necessary and so discarded it.

After the gutter is hung, the workman takes the support down with him as he descends the ladder, allowing the latter to rest upon the gutter. And long experience has never revealed an instance where the ladder was found to bend the gutter, contrary to the natural belief to this effect that would enter a person's mind.

Mr. Wendel explains that this ladder support alone saves about two hours on each day's work, as it is light and strong, with nothing to get out of order. He says further that he and his workmen never think of doing any kind of gutter work without using the support.

Proper Application of Zinc to Building Construction Reviewed by Stephen S. Tuthill.

Secretary of American Zinc Institute Explains Uses and Abuses of Zinc at Michigan Sheet Metal Convention.

MANY of the factors involved in the use of zinc were explained by Stephen S. Tuthill, Secretary of the American Zinc Institute, 27 Cedar Street, New York City, at the Thirteenth Annual convention of the Michigan Sheet Metal and Roofing Contractors' Association, held at Lansing, February 25 to 28, 1924.

The theme of Secretary Tuthill's address was the history of zinc and its proper application to building construction.

History tells us that the word "Zinc" dates from the fifteenth century, and that it was first used by the Swiss medical philosopher, Paraceleus, who had much to do with the application of chemistry to pharmacy and therapeutics.

Until two Englishmen discovered, in the early part of the last century, that zinc could be made malleable by heating it to a certain temperature, the use of zinc was limited to the fields of medicine and brass-making.

Thus treated, zinc may be wrought into sheet, strip, plate, rod, wire, tube, and pressed, drawn or stamped objects.

As an alloy, largely in connection with copper, and also as a desilverizer, zinc is unsurpassed; pharmaceutically and as a paint pigment, the use of zinc is growing by leaps and bounds.

The American Zinc Institute today includes in its membership representatives of practically every zinc mine, of every zinc smelter, and of every zinc roller in this country.

Calling Zinc Zinc.

During the past five years, however, zinc has become more and more articulate and self-assertive; first, because it has insisted upon being called by its right name, and secondly, because it has more and more realized that *ego* is the mainspring of civilization and that every successful man or thing possesses it in a marked degree.

That zinc is zinc, just as much as copper is copper, as lead is lead, as tin is tin, or aluminum is aluminum, is being driven home by the Institute at every opportunity, and calling zinc by its right name has done more to make zinc known than any other thing that has so far been done by the Institute.

The American Zinc Institute is equally interested in this matter from the side of galvanizing (zinc coating) and from the side of pure sheet zinc.

Galvanizing, the Standard dictionary tells us, is coating with metal by the galvanic process, or electroplating.

That authority has also said that galvanized iron is iron coated with tin by galvanic process and then immersed in a zinc bath, adding that the phrase is improperly applied to iron coated with zinc by immersion in a molten bath of that metal.

You may be interested to know that the American Zinc Institute is meeting with considerable success in its efforts to convince the manufacturers of galvanized (zinc coated) articles that they should use more zinc in their protective coating work and retire the word "galvanized" in favor of a name that suggests to the buyer he is getting a product protected 100 per cent by the chief of all protective coatings—*zinc*.

Where Zinc Is Chiefly Used.

More than 60 per cent of the slab zinc produced in this country is used in the zinc coating of iron and steel.

A well-known steel maker recently said to me that substitutes for zinc-coated iron and steel were yearly replacing 1,000,000 tons of iron and steel sheets, requiring more than 100,000 tons of zinc for protective purposes.

Believing that a profitable market will as surely reward the maker of a more efficiently coated zinc sheet as a profitable market has rewarded the makers of improved tin plate, the American Zinc Institute is now conducting negotiations with the association representing the independent companies using large quantities of zinc for protective purposes.

The points under consideration by these two organizations are:

(1) Determination of proper gage and proper coating, through laboratory tests;
(2) Trade marking material made under jointly satisfactory specifications;
(3) Licensing of the use of such trade mark;
(4) Laboratory tests of such trade marked material from time to time;
(5) Withdrawal of the right to use such trade mark whenever necessary to maintain the standard;
(6) An advertising campaign sufficiently broad to acquaint prospective users with the fact that a zinc-coated, or non-corrosive, material was available, the efficiency of which could be absolutely depended upon.

Institute Cooperates with Producers and Consumers.

In its efforts to improve the quality of zinc-coated materials, the Institute is also actively coöperating with practically all of the large producers and consumers of such materials. This work is being carried on under the rules of procedure of the American Engineering Standards Committee.

You, therefore, see that the American Zinc Institute is unreservedly committed to the policy of doing everything possible to give zinc a better name in its union with other metals.

In fact, we maintain that a good name is as much of an asset to a product as it is to a man.

As you doubtless know, during the world war, owing to the high price of zinc incident to munition demands, iron and steel sheets and wire were coated with so-called rust resisting paints and placed upon the market as substitutes for sheet zinc and zinc-coated goods.

Some attention to the jobber whom the manufacturer sells, to the sheet metal contractor whom the jobber sells, and to the consumer whom the contractor sells must be given.

For example, let us take the case of the average consumer of zinc-coated sheets. He estimates the quantity of material he needs, he secures a price on the zinc-coated product, he compares that price with that of a substitute or substitutes, and he then makes his decision.

Consumers Must Avoid Abusing Zinc.

Perchance the prospective buyer may take the trouble to lay his case before the contractor, or even the jobber, in zinc-coated sheets. In that event, there may be recommended a lighter gage sheet or a lighter coated sheet than the conditions warrant, thus bringing down the first cost to a point where a sale can be made.

Or, the contractor or the jobber, as the case may be, will haggle the price to a point where the salesman of the manufacturer, in competition with his fellows, is tempted to take an order which, on its face, means a loss to the mill.

In handling zinc-coated material the contractor carelessly flakes the zinc coating from the sheet or subjects the sheet to sudden or unusual bending stresses, or, perhaps, he will use too light a gage in order to avoid the possibilities of flaking in bending. This can always be avoided by substituting sheet zinc at points where

the flaking risk is involved in the use of zinc-coated material.

Garages and other buildings to the construction of which zinc-coated sheets are especially adapted are being erected with sections damaged by careless workmen and also with uncoated or thinly zinc-coated nails or screws.

In the contemplated campaign of education for the use of a better zinc-coated product, we shall not lose sight of the fact that the jobber, the contractor and the consumer must be instructed to avoid the abuses which have, in no small measure, unfavorably reacted upon the use of zinc-coated material in building construction.

As you probably know, there is available today sheet, strip and corrugated zinc for all forms of zinc roofing, zinc eaves, zinc troughs, zinc down-spouts, zinc ridge-caps, zinc valleys, zinc flashings, zinc or zinc-coated nails, zinc rivets, and other forms of zinc fastenings.

Zinc Workers' Hand Book Coming.

The final galley proofs of the Institute's Zinc Workers' handbook are being held pending the receipt from the Bureau of Standards of a report on certain tests of corrugated zinc sheets and roofing fastenings.

The introduction of the handbook says that more than a century ago the builders in Europe realized the value of sheet or strip zinc in weather-exposed construction, especially roofing. Its use there has grown continually until now a very large percentage of the total output of European zinc is used for that purpose. Many roofs covered when zinc was first used exist today in good condition.

The American tendency is to use the cheaper material, thereby saving on the first cost, without investigating the lasting qualities; or, in other words, the ultimate cost. Hence, tinned plate and galvanized (zinc-coated) steel, which have a lower first cost, but which need constant painting and attention, are the most common roofing metals in use in this country today.

On the other hand, zinc has many advantages over other roofing metals. It is a non-ferrous metal and, therefore, cannot rust. When exposed to the air it becomes coated with a basic carbonate of zinc, which, in the early stages, can be brushed off. In a few weeks' time, however, this coating becomes settled and forms a layer that is sufficiently dense to protect it from further atmospheric action. Thereafter, there is no more change in the metal, which thus becomes practically everlasting. Tests on zinc exposed to the weather have shown that, under ordinary weather conditions, it would take 400 years to decompose a sheet 0.029 inch thick and 723 years for a piece 0.053 inch thick to disappear.

Protection for Zinc Unnecessary.

It is not necessary to paint zinc to protect it. This is done only when, for some architectural reason, a special color is desired. The zinc itself is of a soft grey color, which harmonizes with almost any surrounding.

Zinc is recommended for use on the seashore. Some of the oldest zinc roofs in Europe are on the sands of the Belgian coast, and it has been used with great success in the United States for roofing piers and other buildings near the sea.

The Institute has recently induced the Post Office Department to erect a number of zinc letter boxes along the Atlantic coast, where the ordinary letter box soon rusts out. We hope eventually to be able to substitute the zinc letter box for the cast iron box, especially where the weather conditions are severe.

Zinc is the lightest of all roofing metals.

Zinc is a fire-resistant material. A zinc roof will not be damaged by sparks or pieces of burning wood falling upon it.

Zinc is easy to work. When it is bent it does not tend to spring back to its former position. Zinc is a commonly used metal for architectural ornaments. It was first used for this purpose in the United States in 1871, and its use has steadily increased.

Zinc is not an expensive material; its price is about half that of copper, about the same as the best tin plate, and about twice that of galvanized steel of equal gage in the first cost. However, these two latter materials are decidedly more expensive than zinc over a period of years, because of the cost of continual repainting and replacement.

Judge for Yourself.

To AMERICAN ARTISAN:

Please discontinue my advertisement in AMERICAN ARTISAN.

I have received answers from every section of the country, Canada included.

I have made what purchases I required.

Yours very truly,
WALTER O'NEILL.
Minneapolis, Minnesota.

Allowing for Expansion of Metals.

The most important consideration in laying a metal roof is to allow for the *expansion* of the metal. All metals expand when heated, though some expand more than others for the same amount of heat. Zinc expands more than any other roofing metal except lead, its expansion per ten feet for a difference of 120 degrees being ¼ inch. It is for this reason that flat zinc sheets must never be nailed or fastened rigidly, and this point must be remembered when fitting such sheets together.

When any two metals are in contact, and moisture is present, *electrolytic action* will cause one metal to be corroded or eaten away, the degree being dependent on the metals and circumstances. In the case of zinc in contact with lead, tin or aluminum, electrolytic action may be disregarded. But in contact with iron or copper the zinc will ultimately be attacked if any moisture, even damp air, can get at it. Therefore, in working with zinc care must be taken that no other metals than lead, tin or aluminum touch the zinc. Iron must be well galvanized (zinc-coated). Copper must be well tinned or lead-coated. In places where this is impractical, such as where a roof sheet rests on a steel purlin, the iron must be well painted, or lead washers must be used between the metals. Any iron or copper nails dropped on zinc work must be removed, or the zinc will be injured.

Surfaces to be *soldered* should be carefully cleaned and the traces of grease, dirt, oxide, etc., removed.

What Soldering Flux to Use.

The ordinary "cut acid" soldering flux used in soldering galvanized (zinc-coated) steel may be used. This is made by adding to muriatic acid a little more zinc (scrap pieces) than the acid will dissolve.

Ordinary "half and half" solder used with a moderately hot iron while the surfaces to be soldered are still moist with the flux has proved most satisfactory.

The iron should not be allowed to become red hot, nor should it be applied to the zinc longer than is necessary to give a good joint. One quick pass is usually sufficient.

After the solder has hardened, remove carefully all traces of acid or flux.

The use of a heavy iron is recommended, as the heat can be kept more uniform and is not so quickly lost by surface cooling.

Painting Zinc Unnecessary.

Painting zinc to preserve it is unnecessary, because the coating of basic carbonate that forms after it has been exposed to the weather for a short time prevents further deterioration of the metal. This has already been explained. Sometimes, however, it is desirable to make the roof, or any other zinc surface, a different color than the grey of the oxide, and in such cases it is necessary to paint it.

Zinc is naturally a smooth metal, and paint is likely to scale off. The best results are obtained on zinc that has been oxidized and then brushed. If time is limited, the zinc may be prepared by the application of a solution of eight ounces of copper sulphate dissolved in one gallon of water.

In *bending* zinc, one general principle should be remembered: The most satisfactory bend is the one that is rounded, because the sharper the bend is, the more likelihood there is of the metal cracking.

Zinc should never be worked when it is cold. In extremely cold weather it is advisable to warm the zinc to 60 or 70 degrees before attempting to bend it.

In making hand bends it is better to use a wooden mallet than one of metal, because the latter has a tendency to thin the sheet and is likely also to make bad dents if the sheet is not struck squarely.

One of the most satisfactory forms of zinc roofing used at the present time is the *batten* or ribbed system. This is made by fastening specially shaped strips of wood to the sheathing of the roof. These strips are run with the slope of the roof and the whole covered with sheets of zinc of not less than No. 11 gage (0.024 inch thick), the vertical joints of which are made at the battens.

Flat roofs, or batten roofs of slope less than 2½ inches to a foot may be laid in much the same manner as steep batten roofs, but the carpentry preparation is different.

As zinc expands freely in hot weather, a whole roof cannot be covered with many sheets of zinc soldered together, but allowance must be made for this expansion by laying the roof in small sections. So a flat roof that is covered with zinc must be made in steps.

The corrugated zinc sheet roof is extensively used on industrial buildings, because it combines strength with lightness and easy laying, and will not rust. It will easily be understood that corrugating makes the sheets very rigid lengthwise, so a corrugated roof need only be

supported across the sheet. In other words, it can be laid directly on the purlins.

Corrugated roofs can be laid on either wood or steel purlins.

Attaching Zinc Sheets.

In attaching corrugated zinc sheets to *steel purlins,* a zinc strap 1/6-inch thick and ¾-inch wide is used. These straps are run around the purlins and riveted to the high part of the corrugation on both sides of the purlins.

Corrugated zinc siding is put on in the same manner as the roof. On wood construction a long zinc or zinc clad nail with zinc or lead washers is run through both sheets on the high part of the corrugation and fastened into the wood frame. In steel construction the zinc straps run around and are riveted to either side of *the girts.*

The *standing seam* method for zinc roofing is one of the most universally used in Europe. If applied correctly, it not only is the cheapest roof to lay, but also makes a very satisfactory job. In this roof all the joints between sheets are made by folds, and no solder should be used except at such paces as are mentioned by the manufacturers. It is not advisable, however, to use the standing seam on roofs having a slope of less than two inches to the foot.

Shingle or Tile Roof.

The *shingle or tile* form of roofing is one of the very satisfactory methods of using zinc, and is particularly adapted for residential work. Most of the zinc shingles are patented by the companies making them and directions regarding the special methods of laying them are always forwarded with the shingles.

In all *flashing* with zinc the methods used are similar to those employed with other metals, except for the fact that zinc expands slightly more than these other metals, and hence cannot be attached to the roof in any way that would hamper this expansion. It is inadvisable, therefore, to nail it directly to the roof, and it should always be attached with folds or clips, or by some method that will allow it perfect freedom.

Lime mortar should not be used for pointing up zinc flashings. A precaution that will extend the life of zinc flashing is to give the rows of bricks just over and under the flashing a coat of asphalt. The brick work near the zinc should not be washed with acid.

Used in Metal Ornaments.

One of the most important uses of zinc in architecture at the present time is for *metal ornaments* and shaped metal work. Its wide use for this work is due to several reasons. One is the ease of working zinc by stamping or spinning; another is that zinc is cheaper and easier to work than copper, the other metal commonly used in such work. Galvanized (zinc-coated) iron cannot be used for intricate stampings. Still another reason for using zinc is the fact that it does not need painting and it will not stain a building if water runs over it. This is especially important in country residences where white paint is used.

Zinc sheathing has many advantages over building paper and can be used not only in place of the paper, but can be employed frequently where building paper would be utterly useless.

Zinc sheathing is a thin, pliable sheet of pure zinc. It comes in rolls, can easily be cut with ordinary tinner's shears, is thin enough to be nailed without punching, and pliable enough to be fitted around small openings and corners. It is especially adaptable for buildings that have to guard against vermin and rats.

Skylights made of zinc combine lightness with the non-corrosive and lasting qualities of zinc. These skylights are made in the usual manner, and up to eight feet square can be made of a heavy gage. Above this size the ribs must be strengthened with a T-bar. In the latter case a No. 11 gage can be used to cover these members.

Demand Increasing for Everlasting Roofs.

In view of the present high labor and material costs, the demand is rapidly growing for roofs which do not have to be repaired and repainted annually and frequently replaced.

The first-class architect is already sold on this proposition.

Some jobbers and contractors are not yet, however, as enthusiastic as they might be on this question of "economy of maintenance."

To those who say "business is business," our answer is that there is a fast growing belief that this phrase condemns the business practices which require it as a defense. Do not misunderstand me, gentlemen. I do not hold that business can or ever will be done on altruistic lines.

There are some contractors, and there may be some jobbers, who do not believe in advocating a roofing material which will last 100 years when they can get away with material that will have to be repaired and repainted every year and renewed every five or ten years.

Our answer is that such men will stay in business only long enough for their customers to get wise to them, and the publicity, advertising and exploitation which metal roofings are receiving, and will receive in an ever growing measure, will eventually put these consumers wise.

Let me assure you, gentlemen, that it is the policy of the American Zinc Institute to coöperate whenever it finds such coöperation possible. In line with this policy, it expresses through me a willingness to serve the members of this organization, either individually or as a body, in respect to any problem where it can be of service.

The headquarters of the American Zinc Institute are at 27 Cedar Street, New York City. As its Secretary, I am devoting my time to matters pertaining to the use of zinc in every way and to furnishing information to the public, to the jobber and to the sheet metal and roofing contractor.

Gentlemen, I am always at your service.

Union Builders in 19 Trades Work Peacefully with Non-Union Men of 14 Trades Under Landis Award.

Committee to Enforce Landis Award Gaining Increased Support from Architects and Contractors.

SO-CALLED national contractors coming into a community away from the home base of operations should perform their work in accordance with conditions prevailing in that community without interference with their work in other cities, according to T. E. Donnelley, chairman of the Citizens' Committee to Enforce the Landis Award, who recently addressed 1,500 members of the Associated General Contractors of America at their convention in Chicago.

"With the great employing power of the contractors in this organization," he said, "no international union would dare to oppose such a stand, and if one should, I still have the confidence that the leaders of the building industry would have the vision and manhood to fight it out to an established fact.

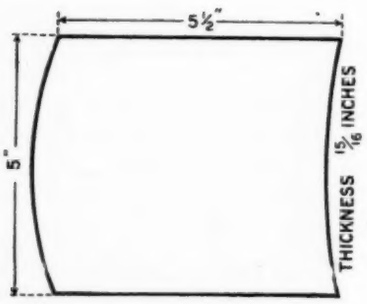
"During the last twenty-six months," said Mr. Donnelley, "the building permits in Chicago have amounted to more than $630,000,000. During this tremendous boom all building in Chicago has gone along uninterruptedly and expeditiously, without strikes, without graft; union men in nineteen trades have worked peacefully with non-union men in fourteen other trades on the same buildings; riots, bombing, etc., have been suppressed; more than fifty-five criminal labor leaders either have been sentenced or are now under indictment, and in spite of this controversy, there has been established a peace in the building industry that Chicago has not known for several decades. The committee has not been able to control all of the business in Chicago, especially most of the speculative apartments and hotels and what are known as the 'prairie contractors,' but every skyscraper, with one exception, erected in Chicago in the

last two years, has been built by Landis Award contractors and finished on time. During the last year 46 per cent of all jobs of $25,000 or more have been done under the Landis Award."

Increasing support is being accorded the Committee by architects and contractors—general and subtrade—and the Landis ranks are constantly growing, according to Mr. Donnelley. With only one exception, it is said, every architect of note in Chicago is now lined up under the Landis standard.

New Hand Dolly for Sheet Metal Contractors Offered Trade by Peck, Stone & Wilcox.

Advance notice has been received from the Peck, Stow & Wilcox Company, Southington, Connecticut, pioneer manufacturers of tools and machines for the sheet metal contractor, that it will soon be ready to offer the trade a tool that will fill a long-felt want. This new tool,



Pexto Hand Dolly.

which will be known as a Hand Dolly, is shown in the accompanying illustration. The size of the face is 5x5½ inches and 15/16 inch in thickness. It is nicely balanced and is fitted with a well-shaped handle. As a support when used inside of tanks for seaming the dolly is invaluable, say the makers. The uses for this tool are innumerable, as the illustration will suggest. It is also a tool which promises to add materially to the progress of the automobile repair shop.

This company's line of stakes has always appealed to the practical worker as the best to be had, and it is needless to state that this new tool in quality, finish and workmanship will compare favorably with what is already commonly known of the complete Pexto tool line.

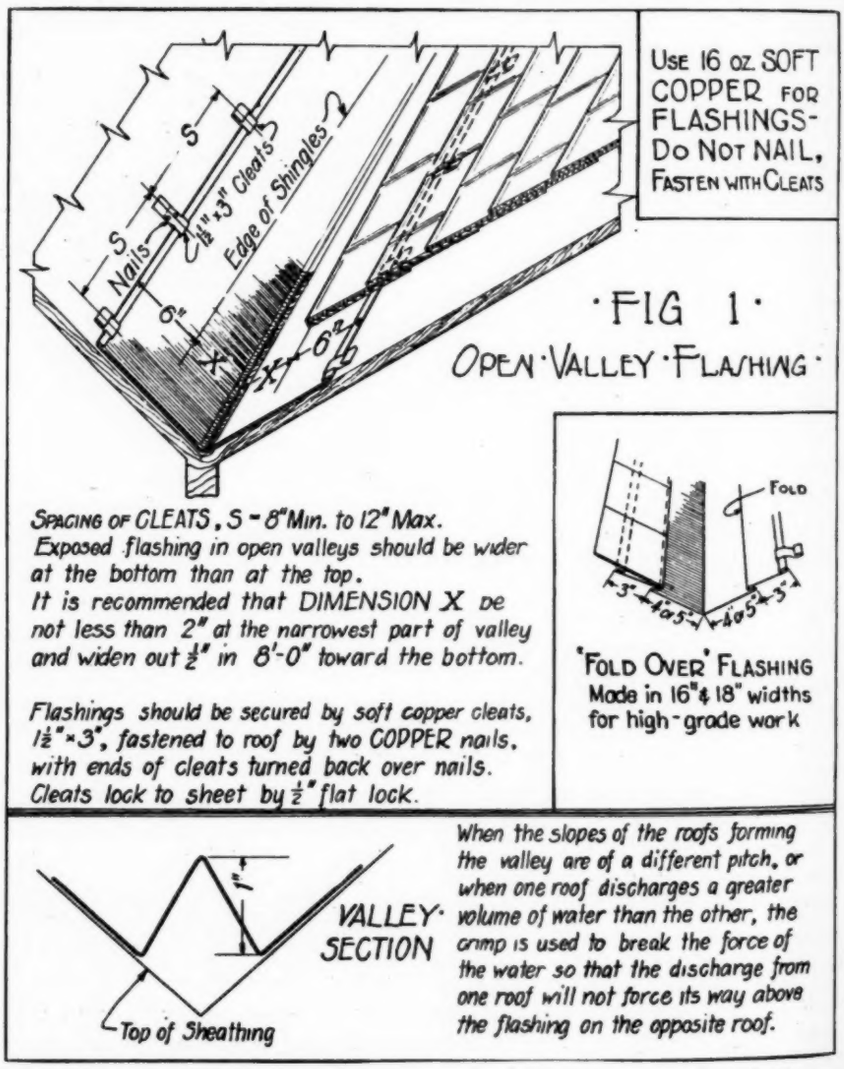
H. E. Nickerson Wants to Know What Effect Acids from Certain Wood Shingles Have on Metals.

W. A. Willis Replies That Tests Show No Detrimental Action on Copper—Acids Soon Washed Out by Rains.

HERE is an inquiry from Congdon & Carpenter Company, Providence, Rhode Island, which the copper, zinc and steel manufacturers will hop onto with avidity and clear up the difficulties of H. E. Nickerson, the writer.

Mr. Nickerson, the Vice-President and Secretary of the Congdon & Carpenter Company, writes as follows:

In your issue of January 26th, on page 15, paragraph 4, you speak of an acid from certain wood as being detrimental to metals. Will you please tell us, if you know,


USE 16 OZ. SOFT COPPER FOR FLASHINGS-DO NOT NAIL, FASTEN WITH CLEATS
S
S Nails
1½"×3" Cleats
Edge of Shingles
6"
X
6"
·FIG 1·
OPEN·VALLEY·FLASHING·
SPACING OF CLEATS, S = 8" Min. to 12" Max.
Exposed flashing in open valleys should be wider at the bottom than at the top.
It is recommended that DIMENSION X be not less than 2" at the narrowest part of valley and widen out ½" in 8'-0" toward the bottom.
Flashings should be secured by soft copper cleats, 1½"×3", fastened to roof by two COPPER nails, with ends of cleats turned back over nails. Cleats lock to sheet by ½" flat lock.
FOLD
3"
4"
4"
3"
'FOLD OVER' FLASHING
Made in 16" & 18" widths
for high-grade work
VALLEY·SECTION
Top of Sheathing
When the slopes of the roofs forming the valley are of a different pitch, or when one roof discharges a greater volume of water than the other, the crimp is used to break the force of the water so that the discharge from one roof will not force its way above the flashing on the opposite roof.

Method Proposed by Copper and Brass Research Association for Making Flashing.

whether or not this acid from cedar and red wood is detrimental to zinc eaves trough and conductor? Also copper and steel, and what effect it would have on lead sheets made from prime western desilverized pig lead, and also lead-coated sheets containing 5 per cent antimony?

H. E. Nickerson, Vice-President Congdon & Carpenter Company, Providence, Rhode Island.

In regard to the question of the wood acid's effect on copper, William A. Willis, Manager of the Copper & Brass Research Association, makes the following comment:

In reply to your inquiry of February 27th, I would say that the tests which we have made with shingles show no action on copper.

However, our attention has been directed to two failures of copper, said to be due to the action of the acids of the shingles. In both cases the failure occurred just at the edge of the shingle, or where it lapped the copper. We believe the failure was due to nailing the copper in place, which resulted in a continued bending or working of the metal on a line parallel to the edge of the shingles and ultimately caused the copper to crack. A recommended method of installing is shown in the accompanying drawing.

Steel, when used for flashing, we believe, will fail, due to rust corrosion rather than due to any action of the shingle acid.

It does not seem reasonable to believe that the acids in wooden shingles will be sufficient to eat through standard weight copper. They will be leached out very rapidly by a few rain storms, and copper will last many years even if these acids, if present, exert a very slight corrosive action.

William A. Willis, Copper & Brass Research Association.

Stephen S. Tuthill, Secretary American Zinc Institute, answered the question with regard to zinc as follows:

One of the greatest jobs we have had here is to keep people from using zinc where it is not suitable, and I do not believe that zinc, or, in fact, any other metal, will stand up against the acids from cedar and redwood shingles.

Stephen S. Tuhill, American Zinc Institute.

Forming Machine Corporation, Buffalo, Produces New Double Truss Cornice Brake.

Forming Machine Corporation, 35 Chandler Street, Buffalo, New York, with thirty-two years of experience in building brakes, have produced an improved Double Truss Cornice Brake.

This new device, according to the statement recently made by the manufacturer, is made in three grades. The improvements that have been made, the company states, result in greater strength, durability, accuracy and simplicity of operation.

Showing New Double Truss Cornice Brake.

The ribs for reinforcement are made of iron. The truss rods are of high carbon steel. The end castings are made of special malleable and take in the full width of the ribs.

The several parts are of a high grade of workmanship, designed to function with ease and satisfaction.

Each machine is fully guaranteed in every detail pertaining to workmanship, material and performance.

Write for further details.

It pays to advertise—regularly.

United Sheet Metal Contractors of Chicago Prepare for Dinner Dance March 15.

The prospects for a very enthusiastic meeting of the Sheet Metal Contractors of Chicago were bright indeed when a large representation of the membership assembled at the Hardware Club, State and Lake Building, Chicago, Wednesday evening, March 5th. At the close of the meeting at a rather late hour the unanimous opinion was that the gathering had been one of the most successful ever held during the history of the Association.

Of course, as was to have been expected, the main topic of conversation was the forthcoming Dinner Dance of the Association which is to be held at the Auditorium Hotel, March 15th, 7 p. m.

Partial arrangements for the entertainment had already been made by the committee in charge when this meeting took place, as it was announced that L. J. Grossman would be the principal after-dinner speaker.

The minimum amount of speaking will be allowed, however, as this is to be a dance. If the toastmaster should accidentally let his axe fall on you, make it short, sweet and snappy.

The members were also assured that the music for the dancing will be of the best, masculine brusque-

ness will vie with feminine pulchritude in tripping the light fantastic.

In view of the recent activities of the Federal prohibition agents at Elgin, punch will be served between dances.

The charge for the dinner and dance will be $3 per person, a moderate charge indeed for an entire evening of real fun. If you have not already made your reservation, get in touch with Secretary W. J. Combs, 7444 Stony Island Avenue, Chicago.

Incidentally, it was mentioned that meetings of the Association will be held every first and third Wednesday evening at the Hardware Club Rooms, State and Lake Building, Chicago.

Just Another of Many Satisfied Subscribers Extending the Glad Hand.

To AMERICAN ARTISAN:

. . . . . However, I appreciate your courtesy and service, and thank you very much for it.

AMERICAN ARTISAN is certainly a valuable business paper and I could not get along without it.

WARDE M. WAGNER.

Hillboro, Illinois.

Thanks for Those Pleasant Words, Frank, We Are Glad to Help the Michiganders.

To AMERICAN ARTISAN:

I wish to take this opportunity of thanking you for the splendid cooperation you gave our Association in making the 1924 Convention the success it proved to be. The publicity given through the columns of AMERICAN ARTISAN surely helped to secure the large attendance.

F. E. EDERLE,

Secretary Michigan Sheet Metal and Roofing Contractors' Association.

Notes and Queries

Pumps.

From Oliver W. Barth, Lamar, Missouri.

Where can I purchase fractional H. P. electric cellar pumps using a rotary pump?

Ans.—Chicago Pump Company, 2336 Wolfram Street; Economy Pumping Machinery Company, 122 North Curtis Street, and Dayton-Dowd Company, 30 North Michigan Avenue; all of Chicago, Illinois.

Repairs for "A-B New Idea" Gasolene Stove.

From C. R. Oberholtzer, 509 West Maumee Street, Angola, Indiana.

Kindly inform me where I can secure repairs for the "A-B New Idea" gasolene stoves No. 133?

OH BOY!

I'm going—haven't seen Jim for 10 years and he'll sure be there—he's a live wire.

YOU COME TOO

DINNER—DANCE

By the

United Sheet Metal Contractors' Assn. of Chicago

at the Auditorium Hotel, Chicago, Saturday Evening, 7 p. m., March 15th. Get your tickets now from Secretary W. J. Combs, 7444 Stony Island Avenue, Chicago, Illinois.

Ans.—A-B Stove Company, Battle Creek, Michigan, and 30 East Randolph Street, Chicago, Illinois.

Pressed Pail Covers.

From T. M. Knowles, 205 West Aurora Street, Ironwood, Michigan.

Can you tell me where to secure pressed pail covers 2 x 6½ inches?

Ans.—American Can Company, 104 South Michigan Avenue, Chicago, Illinois.

"Celotex."

From J. W. Beard and Brother, 232 East Short Street, Lexington, Kentucky.

We should like to know where to obtain "Celotex."

Ans.—From the manufacturers, The Celotex Company, 111 West Washington Street, Chicago, Illinois.

Something to Make Solder Stick.

From Farmers' Supply Company, Lodi, Ohio.

What can we use in soldering milk cans that will make the solder stick?

Ans.—Refer to Callender Soldering Process Company, 12 South Jefferson Street, Chicago, Illinois.

Address of Kelsey Furnace Company.

From Frank Schidlofski, 427 Eighth Street, Moline, Illinois.

Will you please advise us where the Kelsey Furnace Company is located?

Ans.—This is the Kelsey Heating Company at Syracuse, New York.

"Kelsey" Furnace.

From J. W. Beard and Brother, Lexington, Kentucky.

Kindly inform us who manufactures the "Kelsey" furnace.

Ans.—The Kelsey Heating Company, Syracuse, New York.

White Enameled Fiber Ware.

From McQuesten Hardware Company, Muscatine, Iowa.

Please advise us where we may secure white enameled fiber ware such as waste baskets, hospital ware, and the like.

Ans.—Universal Hospital Supply Company, 500 North Dearborn Street, Chicago, Illinois.

Machines for Grinding Lawn Mower Blades.

From T. W. Boerem, Corner State and Second Street, Elmira, New York.

Will you kindly give me the name and address of a firm that manufactures machines for grinding lawn mower blades?

Ans.—The Whitaker Manufacturing Company, 409 South Green Street, Chicago, Illinois; Coldwell Lawn Mower Company, Newburgh, New York; and Luther Grinder Manufacturing Company, Milwaukee, Wisconsin.

Pinking Irons.

From Pekin Hardware Company, 337 Court Sreet, Pekin, Illinois.

We should like to know who manufactures pinking irons.

Ans.—Kraeuter and Company, 583 18th Avenue; P. Lowenstraut Manufacturing Company, 36 Brenner Street, and C. S. Osborne and Company, Box 183; all of Newark, New Jersey.

Display Carpenters' Tools So as to Sell to Handy Man About House This Spring.

Take Advantage of "Pointer" Principle to Attract; Centralize Interest and Suggest Items to the Home Owner.

THERE is something exceedingly fascinating about a line in a window display pointing in some definite direction, especially a diagonal line. It forms a path along which the eye can travel; in fact, it has the same effect on the vision that a lightning rod has on a streak of lightning—it first arrests and then directs attention.

This principle has long been known to psychologists, and advertisers are taking advantage of it more and more in their copy.

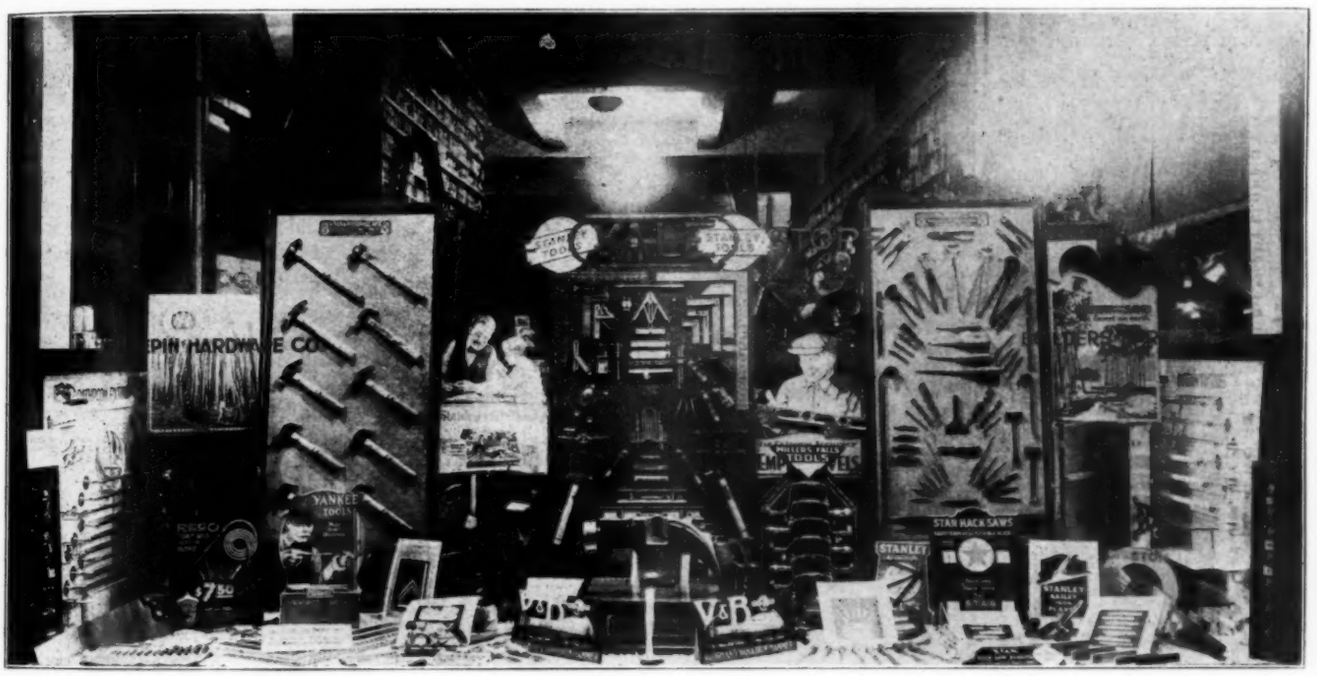
An excellent opportunity is given the window trimmers in making displays of tools of making use of this principle, as most tools have handles or some long projecting point, it is very easy to place them so as to make a "pointer."

In the accompanying illustration the window trimmer, W. H. Owen, has made very good use of this idea. The window is that of Hennepin Hardware Company, 909-913 Hennepin Avenue, Minneapolis, Minnesota.

This display was made to appeal to the carpenters and also the handy man around the house. During the week which this display was in the window the Hennepin Hardware Company had an exhibit of tools in which twenty-five manufacturers were represented; many of these manufacturers sent a special representative to demonstrate their products.

The window created excellent publicity for the store.

Note the bathroom fixtures on the side panels. These panels were in the window for several weeks, and increased the sales of those articles tremendously.



Tool Window Display Made by W. H. Owen for Hennepin Hardware Company, 909-913 Hennepin Avenue, Minneapolis, Minnesota, in Conjunction with Exhibit, and Which Created Big Sales.

Price Maintenance Question Is Always with Us.

In one form or another the matter of price maintenance keeps popping up. One day last week the Federal Trade Commission had the matter once more before it on an application by a woolen manufacturing concern seeking a modification of one of the usual "cease and desist" orders. What was sought was a definition of how far the manufacturers could go in trying to find out which of their customers were not maintaining prices. Their right to choose their customers has hitherto been established. The commission took the matter discussed under advisement. On the same subject came a complaint to the public at large from a well-known firm of silk manufacturers. It wishes the prices maintained in the sale of its fabrics, claiming that a contrary course tends to lower the estimation of its wares by the ultimate consumers. This particular house had an experience in the matter which was aired some years ago in the courts and which lends some point to its complaint. Some of its fabrics were

included in a general lot of silks offered for sale at retail at very low prices. To the casual reader of the announcement of the sale it looked as though all the fabrics were from the house in question, whose goods are in high repute. The high-class fabrics were used merely as a bait, a very small quantity being offered, but it looked as though they had been really cut in price generally. In such a case an appeal to the courts put a stop to the practice. Instances of the kind, however, show that there is really more than one side to this question of price maintenance.

Charles H. Sutton Reveals Secrets of Successful Credit and Collection Making to Michigan Hardware Men.

Says Accounts Receivable Should Be Within Limit of 25 Per Cent of Investment When Properly Financed.

THE problem of knowing when and how to extend credit is, indeed, a tricky one and one that also requires tact and diplomacy. There are, however, certain well recognized precautions which when properly interpreted and used will save the merchant much worry and aggravation.

Charles H. Sutton, Howell, Michigan, is recognized as a man who perhaps knows about as much concerning this elusive problem of Credit and Collections as anybody, and the address on that subject published hereinafter was made by him at the convention of the Michigan Retail Hardware Association at Grand Rapids, February 12 to 15, 1924:

Credit and Collections.

Credit and collections should demand careful study and important consideration in the management of any business. It's the vital organ of your business; when it fails to function properly it impairs efficiency of the other organs; when it becomes overloaded and sluggish it forces that poisonous germ "Failure" into the system of that business, and when once firmly imbedded it usually remains to take its toll.

Why shouldn't credits demand consideration and attention? It's a department of your business just as much as buying, selling or advertising, therefore, it is a merchandise problem. These other departments are within your grasp at all times, but credit distributes a portion of your capital to the four winds of Heaven to be reclaimed through collections, and should be watched closely so that too much of your capital will not be blowing about.

Defining Credit.

Credit is usually defined as faith in your fellowmen, but it is more than that; it is granting your fellowmen the use of a portion of your capital without interest, and there is just where the danger lies, that is, keeping your accounts receivable within the limit of your finances. I believe I am liberal when I say the limit should not exceed 25 per cent of your investment when properly financed, and should also be controlled by the amount of working capital, and the only way you can derive intelligent knowledge every day of those conditions is by a simple but efficient accounting system; then you can tell at a glance when accounts receivable are growing beyond your resources and you can put more pressure on your collections to reduce them.

When It Is Not a Detriment.

Credit, properly handled, is not a detriment to a business, and any merchant is doing it an injustice that condemns it. It's just the same as any other department of your business, to obtain satisfactory results requires attention and good judgment. Sound credit is a benefit to a community; it encourages improvement and expansion; it is also an advantage to a merchant; it increases his volume of business and gives him a leverage over the cash store when you stop and consider the greater percentage of the business of the country is done on credit.

The extension of credit requires certain defined principles. First, examine and investigate your credit risk before extending credit; it will save you a whole lot of expense and worry. Secondly, have definite credit terms. Thirdly, judge your risk according to their character, capital and capacity; the character of a person is of greater importance than wealth in extending credit, and it is very necessary to know their personality and be impartial. With these basic principles to guide you, it is necessary to have operative principles to carry them through successfully.

Start collecting the minute you make a sale by having a definite time set for payment, then your request will not be offensive; sell everything with enough value and a resale value, on contract, and above all things, record the contract or it is of no more value than a book account; send out monthly statements regularly, they are beneficial in many ways and well worth the expense; follow up your statements when necessary with one or more polite, but convincing letters requesting payment, and last, close the accounts that in your judgment have run long enough with a short term note. You can receive judgment much easier on a note than on an account. It is convincing evidence, and it also removes the unpleasant arguments which an account invites.

Diplomacy Must Be Used.

I should not expect you to apply all these principles in every case, but you should use them every day; your judgment should decide when to use them. It is not necessary to be harsh and radical in applying these principles. You must use diplomacy. It is just a matter of educating the public to your methods of doing business, and it is not so difficult as you think. The real principle back of the whole thing is to make the public want to purchase your merchandise, and then your sound credit methods will appeal to them as a business necessity. The fact is, the public expect it and you are the one to adopt them.

Don't let these words go unheeded; it is for your own good. The time to start is now. As a brother merchant, I beg of you to give credit and collection more attention.

Trade Associations Promote Better Relations Between Competitors and Public.

One of the most significant developments in the field of merchandise distribution in recent years is the tendency on the part of retailers, jobbers, wholesalers and manufacturers to recognize their common interests rather than to regard one another as natural enemies, as they formerly did. An important agency in bringing about better relations between different groups of distributors in any given line is the trade association. The domestic distribution department of the Chamber of Commerce of the United States has just published the results of a study which it has made of the specific things that trade associations are doing in promoting better understanding between various classes of distributors. Information obtained from seventy-six associations indicated that sixty-six of them, or 87 per cent, were active in promoting better relations within their respective lines of trade; that fifty-seven, or 75 per cent, were active in promoting mutually understood business ethics, and that thirty-eight, or 50 per cent, either maintained central bureaus for collecting, dissecting and acting on complaints of unfair practices, or at least were carrying on some phase of this work.

Walden Hardware Company Uses Wholesome Publicity to Iron Out Valleys of Depression.

Wideawake Sales and Publicity Methods of Southern Hardware Store Produce Tangible Results.

ISN'T it an axiom that the greater the amount of favorable publicity you can give your store, the more people are going to be interested in it and the more sales that store is going to make? Certainly it is. And there are wide-awake stores in the hardware field who are availing themselves of every opportunity which offers itself to let people know what they sell and how their store ranks in its line.

Some time ago an advertisement of the Walden Hardware Company, 337 Central Avenue, St. Petersburg, Florida, came to the attention of the Editor of AMERICAN ARTISAN AND HARDWARE RECORD. This advertisement offered sporting goods—chiefly hunters' outfits, it being at that time the fall hunting season—but the ad sounded much more like a Jack London tale of adventure than an advertisement. Why? Because the writer had put his owner personality into it. He wanted to interest a certain specific class of prospective customers and he adopted what he must have learned was the quickest and surest method of accomplishing his object. He touched his prospects where they were sure to respond.

The Editor of AMERICAN ARTISAN AND HARDWARE RECORD then wrote to Robert Walden, President and General Manager, asking for an explanation of his method.

In reply, Mr. Walden courteously submitted two excellent illustrations of the window displays which he used in conjunction with his unique newspaper advertising.

These illustrations, together with a somewhat detailed account of a hunting trip taken by Mr. Walden and some friends, appeared in AMERICAN ARTISAN AND HARDWARE RECORD in the January 12, 1924, issue.

Mr. Walden was quick to appreciate the wonderful opportunity this story gave him to give his store additional publicity; to let people in St.

The American Artisan and Hardware Record. of date January 12, 1924, published a story occupying two full pages and one column which we reproduce herewith as indicating how national publications are watching St. Petersburg, admittedly the fastest growing city in the United States Naturally, we are complimented that our store was noticed by the editor of the American Artisan and Hardware Record, whose offices are at 520 South Michigan Avenue, Chicago. It is a satisfaction to get National recognition from a leading hardware publication which has wide circulation and naturally will bring St. Petersburg and ourselves before big business interests in all sections of the country. We are more concerned about the good St. Petersburg will derive from this publicity than we are about the benefits we will derive. You understand, of course, that we are for St. Petersburg first at all times and for ourselves second. We believe you will be interested in reading the article we reproduce.—Robert Walden, President and General Manager of the Walden Hardware Company, No. 337 Central Avenue, St. Petersburg.

Blue List Service Trade Mark

Blue List Service Trade Mark

Robert Walden Increases Sporting Goods Sales With Unusual Type of "Newsy" Advertising

Makes Store Headquarters for Information on Hunting Laws, While He Himself Uses Goods He Recommends to Others

Some sage advertiser has said that introducing current news into advertising copy is an excellent practice, if, in fact, it is not an absolute necessity. In many cases this mode of telling the story is so cleverly carried out as to completely clothe and submerge from the reader the actual purpose.

There came to our attention recently an advertisement of this nature, which appeared in the St. Petersburg, Florida, Times. The advertisement was one column wide and extended the length of the sheet. Incidentally, the sheet contained fourteen pages in all, six of which were given over entirely to real estate advertising, while that of hardware and stoves, as usual, was lacking, with the exception of the hardware ad mentioned and one small stove ad. A deplorable fact!

The Walden Hardware Company, 337 Central Avenue, is the owner of the ad, and to them is due great credit for their originality.

Due to its length and exceeding narrowness, however, we were unable to reproduce it, so we will give you an idea of how it looked.

The heading of the ad began:

"Today's story is about today, which is the day the hunting season opens to continue until February 15, 1924. We ask you to see our display of hunting goods in our west window. Last Saturday from 5 until 9 or eight men stood three deep before this display in our hunting window."

This was set in large, bold faced type, with ample white space between the lines, each line containing not over two or three words.

The next paragraph, in smaller type, follows:

"We believe they saw there the Heart of the Woods, which is reflected in the heart of all red-blooded men.

"The new windows have the background to give our boys a chance for artistic displays, and you will admit they have made the most of their opportunity in presenting a novel and attractive setting with little trace of artificial device."

Then the copy ran on, talking about the shouldering of responsibility in the following fashion:

"We are shouldering a great deal of responsibility in inviting you to see this display, for it will doubtless start an exodus woodwards which will approximate the gold rush of 1849 and leave St. Petersburg bereft of its male citizenship for several days. But what difference will it make so long as they return more enthusiastic over their state and city than ever?

"Personally, we don't pretend to be a man of iron, and when we saw our own display and heard, as we always do at this time of year, the call of the woods, we just had to go hunting. So Jimmie Wade, freight agent of the Atlantic Coast Line, and I are on our way for a three days' hunting trip and we are using the guns, the ammunition and all the other equipment that we suggest other hunters should use on these trips and which we have in stock."

The ad was then signed by Robert Walden, President and General Manager of the Walden Hardware Company, 337 Central Avenue, and the statement to the effect that Mr. Walden backs up every statement made in his advertisements and that's why Blue List Service signs the advertisements with him with its Blue List trade mark.

The Blue List Service trade mark was also shown in the ad.

Here is an instance of the proprietor showing real enthusiasm about the sporting goods department of his store, he himself uses the goods which he recommends others use and can talk with authority to the hunting fans.

More of this type of advertising will increase the number of converts in your way of thinking and incidentally increase your profits.

The following interesting comment from Robert Walden, Manager of the Walden Hardware Company, shows that business can be had if you go after it:

"We take a great deal of pride in our windows; every one of us in the store makes suggestions as to what we shall display, and out of all these suggestions, two of our young men produce displays that are acknowledged to be very attractive. Recently we kept a display of hunting goods in one window for more than a fortnight because it attracted so much attention from so many people. About everything that has to do with hunting was displayed and the combination was certainly splendid. Our young men installed colored lights that gave the green leaves of the South the color of autumn leaves in the North, which produced a very fine and pleasing effect.

"In the other window we display quite frequently all of the things that are needed for fishing trips.

"Our hunting and fishing windows appeal to the force in the store, because every one of us hunt and fish. When we go hunting we have to travel quite a distance from home, but it is worth while because there is no trouble to get all the quail, duck and wild turkey we want.

"As to fishing, the waters around St. Petersburg are alive with 294 varieties of game fish, and the best fishing grounds in the world can be reached in about an hour's motorboat trip from either St. Petersburg or Pass-a-Grille, made famous by John Wanamaker, who spent the last years of his life fishing in the waters thereabouts and winning prizes for big catches of king fish and amberjack.

Describes Hunting Trip

"The hunting trip you asked me to describe was not specially eventful, but we always make it a rule when the hunting season opens to go away with a friend for three days for quail and duck.

"We left St. Petersburg the night before the hunting season opened and hunted three days and had wonderful luck. We killed our quota of quail every morning and spent the afternoon getting duck. There were plenty of duck, but it was difficult to get anywhere near them; however, we bagged all we wanted to eat in camp and had a fine lot to bring home with us. All of the hunters have had very good luck this season. It is one of the best seasons we have had.

Finds Window Displays Valuable

"Reverting again to our window displays, we wish to say that we find them most valuable in popularizing our store. We pay a lot of attention to them. We always display lines that are timely, and we find that our business shows marked increases in the lines we display.

"Recently we put on a display of Duplex Fireless Cookers, which continued for a week. A young woman demonstrated how to use the fireless cooker and distributed among customers samples of her cooking, which were mighty good. We sold more fireless cookers during that week than during any week in the history of our business.

"The sales this year to hunters have been larger than for years. Two reasons exist for these sales.

"First, we have adopted an advertising program which is followed out regularly in both of our home town newspapers every week; secondly, our advertising calls attention to our window displays, which furnish demonstrations of our ability to back up our advertising with the quality of the goods we handle.

"We know that it is worth while for us to maintain the character of our window displays and we regard our investment in making these windows attractive as one of the most profitable in our business."

Illustrating Just One of the Many "Stunts" by Which the Walden Hardware Company, St. Petersburg, Florida, Creates Publicity and Builds Good Will—A Good Method—Try It!

Petersburg know what his store has to sell and how it ranks with other stores; to let the people of his town know that his store was a permanent establishment ready and anxious to boost the city and at the same time render a service which those people needed.

The story appearing in AMERICAN ARTISAN AND HARDWARE RECORD was incorporated into an advertisement of the Walden Hardware Company, together with the illustrations of the store's window displays. This advertisement was 12 x 15 inches over all and it appeared in the Sunday, January 27th issue of the St Petersburg, Florida *Times*.

We have reproduced the ad as it appeared, with the exception of the illustrations, which could not be reproduced in a zinc etching. The illustrations appeared in the middle of the article where a slight opening has been left between the reading matter.

This is the type of publicity that creates business for the Walden Hardware Company and the management of this store is to be congratulated upon its aggressive publicity and sales methods.

We might also add that Mr. Robert Walden believes in tying up his windows with newspaper advertising.

F. L. Coes, Coes Wrench Company, Dies at 72 Years of Age.

Frederick L. Coes, long identified with Coes Wrench Company, Worcester, Massachusetts, died recently at Orlando, Florida, at the age of seventy-two.

He retired from business twenty years ago, and until his wife died four years ago, traveled extensively with her. Since her death Mr. Coes spent his summers at Rockland and his winters in Florida.

Coming Conventions

Wisconsin Sheet Metal Contractors' Association, March 11 and 12. Republican House, Milwaukee. Carl Andersen, Racine, Secretary.

Iowa Sheet Metal Contractors' Association, March 13 and 14, Wahkonsa Hotel, Fort Dodge. R. E. Pauley, Secretary, Mason City.

California Retail Hardware Implement Association Convention and Exhibition, Civic Auditorium, San Francisco, March 18, 19, 20, 21, 22, 1924. LeRoy Smith, Treasurer, 112 Market Street, San Francisco.

Spring Convention of American Hardware Manufacturers' Association, Roosevelt Hotel, New Orleans, Louisiana, April 8, 9, 10 and 11, 1924. Frederick D. Mitchell, Secretary - Treasurer, 1819 Broadway, New York City.

Annual Convention of Southern Hardware Jobbers' Association, April 8, 9, 10 and 11, 1924, at Roosevelt Hotel, New Orleans, Louisiana. John Donnan, Secretary-Treasurer, Room 821, American National Bank Building, Richmond, Virginia.

Old Guard Southern Hardware Salesmen's Association, April 9. Hotel Roosevelt, New Orleans. R. P. Boyd, Secretary, R. F. D. 4, Nashville, Tennessee.

Illinois Sheet Metal Contractors' Association, Jefferson Hotel, Peoria, Illinois, April 9 and 10, 1924. Fred C. Gross, Secretary, 219 South Fifth Street, Quincy, Illinois.

National Warm Air Heating and Ventilating Association Convention, Hotel Winton, Cleveland, Ohio, April 16 and 17, 1924. Allen W. Williams, 52 West Gay Street, Columbus, Ohio, Secretary.

Missouri Sheet Metal Contractors' Association, Kansas City, Missouri, April 22 and 23, 1924. John B. Fehlig, Secretary, 528 Delaware Sreet, Kansas City, Missouri.

Panhandle Hardware and Implement Association, Amarillo Hotel, Amarillo, Texas, May 12, 13 and 14, 1924. C. L. Thompson, Secretary and Treasurer, Canyon, Texas.

National Association of Stove Manufacturers, Hotel Astor, New York City, May 14 and 15, 1924. Allen W. Williams, Temporary Secretary, 52 West Gay Street, Columbus, Ohio.

Southeastern Retail Hardware and Implement Association, composed of Alabama, Florida, Georgia and Tennessee. Convention and Exhibition, Atlanta, Georgia, May 27, 28, 29, 1924. Walter Harlan, Secretary, 701 Grand Theater Building, Atlanta.

National Retail Hardware Association Congress, San Francisco, California, June 16, 17, 18 and 19, 1924. Herbert P. Sheets, Secretary, Indianapolis, Indiana.

Hardware Association of the Carolinas Convention, Wrightsville Beach, North Carolina, June 17, 18, 19, 1924. T. W. Dixon, Secretary - Treasurer, 717-718 Commercial Bank Building, Charlotte, North Carolina.

Convention National Association of Sheet Metal Contractors of the United States, Raleigh Hotel, 12th and Pennsylvania Avenue, N. W., Washington, D. C., June 17, 18, 19 and 20. Edwin L. Seabrook, Secretary, 608 Chestnut Street, Philadelphia.

Retail Hardware Doings

Arkansas.

R. S. Stephens and his son, Vernon, have disposed of their interests in the Pittman-Stephens Company, hardware firm of Gurdon. The name of the firm has been changed to Pittman-Powell Hardware Company.

Illinois.

Charles W. Johnson has purchased the interest of his partner, Charles Ginthardt, in the hardware business at Sheffield. Mr. Johnson is a son-in-law of E. F. Hortz, the original owner of the business.

Fred Crandall, of the Crandall Lumber and Hardware Company, East Alton, is planning to move the hardware store he has conducted on Smith Avenue for many years to Wood River.

H. Bolte, who has been engaged in the hardware business on North State Street, Geneseo, for thirty years, has sold his business to Messrs. Blaine and Barnes.

Iowa.

Mr. George T. Gadd will open his new hardware store at Cedar Rapids under the name of George T. Gadd Hardware Company, at 322 South Second Street, April 1st.

W. H. Lyons has sold his hardware store at Salem to Clark Hallowell.

Michigan.

H. K. Graham and his son, James, have sold their hardware store at Berrien Springs to H. C. Angell of South Haven.

Minnesota.

J. B. Finnegan has sold his hardware stock at Kenneth to Messrs. Lannertz of Slayton.

Oscar C. Daehn has sold his interest in the Marble Hardware Store, Marble, to Charles Adams of Naswauk.

John Teplicky and John Muhich have opened a hardware business at Eveleth.

Mississippi.

The Hollandale Hardware Company, Hollandale, has been incorporated with a capital of $7,500. Incorporators are: J. S. Brock, Edmund Orgill and William Orgill.

Nebraska.

The Carl Schwink Implement store at West Point has been destroyed by fire.

The Faris and Long Hardware Company have dissolved partnership. E. T. Long, junior member of the firm, has withdrawn.

A deal has been completed whereby J. N. Robifloux disposed of his hardware business at Benkelman to Walter Hickling. Mr. Hickling traded his 520-acre farm on the south side of the track at Doane for the same.

The Bert Wilhite Building on North Main Street, Gordon, is now occupied by Waddil Brothers, who have put in a large stock of heavy hardware.

The West Hardware store at Wood River has been sold to Mr. Musselman of Fullerton.

Pennsylvania.

The Shulman Hardware Company at East Bethlehem has been damaged by fire.

South Dakota.

In a deal recently closed, Albert Moseson became the sole owner of the Chase and Moseson Hardware business, he having purchased the interest of his partner, Ed Chase.

Joe Beach is the new proprietor of the Draper Hardware store at Draper.

Wisconsin.

Owen Skavlem, who for some years has been connected with the Sheldon Hardware Company in Janesville, has been elected Vice-President of the concern.

F. D. Kemp has sold his hardware business at 122 North Water Street, Sparta, to J. C. and George Johnson.

Precautions to Be Taken to Prevent Carbon Monoxide Poisoning from Gas Stoves.

Attention Called to Danger in Special Bath Room Water Heaters Without Chimney Attachment.

A RECENT report by a consulting gas expert states that there are over 2,000 natural gas-using towns and over 4,600 manufactured gas-using towns in the United States and that gas is used by over one-half of our population.

Artificial gas, it is stated, creates a double hazard, since carbon monoxide is an important component and therefore death may result from simply breathing it, as from unsuspected leaks. Natural gas does not contain carbon monoxide nor other readily toxic ingredients, but if burned incompletely, as most frequently happens from a poor or defective air mixer on a gas stove built on the Bunsen principle, will readily yield death-dealing amounts of the gas. So also will any carbon-containing fuel.

About 25 per cent saturation produces symptoms in the average person; 50 per cent will produce unconsciousness, while 75 per cent usually produces death. As small an amount as one-tenth of 1 per cent in the air may ultimately prove fatal because of the affinity of the gas for the red corpuscles, which is some 300 times that of oxygen, by which a slow displacement ending in asphyxia results.

The unusual increase, at this time, in the incidence of mishaps is said to be due to the appearance of the "radiant" type of domestic heating stove which, according to Smithsonian Institution Bulletin 102, No. 8, is likely to produce carbon monoxide gas whenever the radiants glow over three-fourths of the distance from the bottom to the top. Hence a slight increase in gas pressure, as usually occurs overnight, due to lessened general use of gas, may easily change a stove, operating innocently enough in the daytime, to a carbon monoxide generator in the middle of the night. This is borne out by the fact that most of the mishaps occur overnight in bedrooms (in which windows are also closed).

It is noteworthy, too, that the size of the room has little significance in the end, as some Ohio mishaps occurred in large rooms open to each other and even in stores during business hours.

Furthermore, investigations by the Ohio State Department of Health and the United States Bureau of Mines have shown that some of the cheaper heating stoves placed on the market are inherently defective and yield death-dealing amounts of carbon monoxide under regular conditions of normal gas pressure even when burned according to directions accompanying them.

(Attention is also called to the use of gas-fired water heaters of the instantaneous type commonly set up in bathrooms, kitchens, etc., without a chimney attachment, and the comment is made that in such cases water heaters are especially dangerous because carbon monoxide is yielded whenever a carbonaceous flame touches a cool surface.)

Another phase of the question is the keen competition between manufacturers of gas stoves which has resulted in constantly cheapened products with wide variations from the fundamentals of safe construction laid down by the United States Bureau of Standards. Still another is the fact that distributors and retail dealers are said to remove the warning labels in many instances which are attached by the manufacturer, which labels proclaim danger unless the devices are adequately ventilated when set up. However, it would seem easy, in this contingency, to stamp or impress the warning label into a conspicuous part of the stove. Furthermore, building laws requiring permanent types of chimney construction, such as brick, etc., for all smoke flues (underwriters usually place the flue for gas stoves under this heading) offers another serious block to remedying the situation, both in buildings already constructed and in the expense of extra chimneys in new construction.

Outlet Pipes for Gas Burners.

While placing the gas stove in the fireplace or equipping it with a hood and outlet pipe does not always guarantee its safety (because of faultily constructed or blocked-up smoke flues, or, indeed, reverse drafts which sometimes occur in chimneys), such is the best-known safeguard at the present day. Experience shows that it is useless to repeat that plenty of room ventilation will suffice since, on cold days, people insist first on comfort.

Do not use without adequate flue ventilation should be the slogan for all types of gas-fired room heating devices, to which should be added the instantaneous water heater.—E. R. Hayhurst, M. D., consultant Division of Industrial Hygiene, Ohio State Department of Health, in the *Journal of Public Health.*

National Association of Stove Manufacturers Will Meet in New York City, May 14 and 15.

The Annual Convention of the National Association of Stove Manufacturers will be held May 14th and 15th, in Hotel Astor, New York City.

Allen W. Williams, 52 West Gay Street, Columbus, Ohio, is Temporary Secretary.

Pacific Stove & Range Company, Seattle, Organized—T. H. Eggers, President.

W. H. Mackey, formerly with Washington Stove Works, Everett, Washington, and T. H. Eggers have organized the Pacific Stove & Range Company, and will establish a foundry at Idaho and Dwamish Streets, Seattle.

The new company will specialize in stove work. T. H. Eggers is President and W. H. Mackey is Vice-President and Manager.

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

PIG IRON.

Chicago Foundry	24 50
Southern Fdy. No. 2	29 01 to 29 51
Lake Sup. Charcoal	29 04
Malleable	24 50

FIRST QUALITY BRIGHT TIN PLATES.

		Per Box
IC	14x20 112 sheets	$12 45
IX	14x20	14 05
IXX	14x20 56 sheets	17 57
IXXX	14x20	18 12
IXXXX	14x20	18 65
IC	20x28 112 sheets	27 50
IX	20x28	29 85
IXX	20x28 56 sheets	16 15
IXXX	20x28	17 20
IXXXX	20x28	18 25

TERNE PLATES.

		Per Box
IC 20x28, 40-lb.	112 sheets	$25 60
IX 20x28, 40-lb.	" "	28 50
IC 20x28, 30-lb.	" "	21 80
IX 20x28, 30-lb.	" "	24 70
IC 20x28, 25-lb.	" "	20 80
IX 20x28,25 lb.	" "	23 70
IC 20x28, 20-lb.	" "	18 30
IV 20x28, 20-lb.	" "	21 15
IC 20x28, 15-lb.	" "	17 05
IC 20x28, 12-lb.	" "	15 75
IC 20x28, 8-lb.	" "	14 05

COKE PLATES.

Cokes, 80 lbs., base, 20x28	$13 85
Cokes, 90 lbs., base, 20x28	14 10
Cokes, 100 lbs., base, 20x28	14 45
Cokes, 107 lbs., base, IC 20x28	14 35
Cokes, 135 lbs., base, IX 20x28	17 40
Cokes, 155 lbs., base, 56 sheets	9 75
Cokes, 175 lbs., base, 56 sheets	10 65
Cokes, 195 lbs., base, 56 sheets	11 70

BLUE ANNEALED SHEETS.

Base ..... per 100 lbs.	$3 50

ONE PASS COLD ROLLED BLACK.

No. 18-20 ..... per 100 lbs.	$4 50
No. 22-24 ..... per 100 lbs.	4 55
No. 26 ..... per 100 lbs.	4 60
No. 27 ..... per 100 lbs.	4 65
No. 28 ..... per 100 lbs.	4 70
No. 29 ..... per 100 lbs.	4 75

GALVANIZED.

No. 16 ..... per 100 lbs.	$4 85
No. 18-20 ..... per 100 lbs.	5 00
No. 22-24 ..... per 100 lbs.	5 15
No. 26 ..... per 100 lbs.	5 30
No. 27 ..... per 100 lbs.	5 45
No. 28 ..... per 100 lbs.	5 60
No. 30 ..... per 100 lbs.	6 10

BAR SOLDER.

Warranted.	
50-50 ..... per 100 lbs.	36 00
Commercial.	
45-55 ..... per 100 lbs.	34 50
Plumbers ..... per 100 lbs.	34 00

ZINC.

In Slabs	7 75

SHEET ZINC.

Cask lots, stock, 100 lbs.	11 75
Less than cask lots, 100 lbs.	12 25

BRASS.

Sheets, Chicago base	20¼c
Mill Base	18¾c
Tubing, brazed, base	25½c
Wire, base	18¾c

COPPER.

Sheets, Chicago base	21½c
Mill base	20¾c
Tubing, seamless, base	24 c
Wire, No. 9 & 10 B. & S. Ga.	17¾c
Wire, No. 11, B. & S. Ga.	17¾c

LEAD.

American Pig	$10 75
Bar	11 75
Sheet.	
Full Coils ..... per 100 lbs.	10 75
Cut Coils ..... per 100 lbs.	11 75

TIN.

Pig Tin ..... per 100 lbs.	61 00
Bar Tin ..... per 100 lbs.	62 00

HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.

ADZES.

Coopers'.	
Barton's	Net
White's	Net

AMMUNITION.

Shells, Loaded, Peters.	
Loaded with Black Powder	18%
Loaded with Smokeless Powder	18%
Winchester.	
Smokeless Repeater Grade	20 & 4%
Smokeless Leader Grade	20 & 4%
Black Powder	20 & 4%
U. M. C.	
Nitro Club	20 & 4%
Arrow	20 & 4%
New Club	20 & 4%
Gun Wads—per 1000.	
Winchester 7-8 gauge	10&7½%
" 9-10 gauge	10&7½%
" 11-28 gauge	10&7½%

ASBESTOS.

Paper up to 1/16	6c per lb.
Rollboard	6¼c per lb.
Millboard $/32 to ½	6c per lb.
Corrugated Paper (250 sq. ft. to roll)	$6.00 per roll

AUGERS.

Boring Machine	40&10%
Carpenter's Nut	50%
Hollow.	
Stearns, No. 4, doz.	$11 50
Post Hole.	
Iwan's Post Hole and Well	35%
Vaughan's, 4 to 9 in.	$15 60

AXES.

First Quality, Single Bitted (unhandled), 3 to 4 lb., per doz.	$14 00
Good Quality, Single Bitted, same weight, per doz.	13 00

BARS, CROW.

Steel, 4 ft., 10 lb.	$ 80
Steel, 5 ft., 18 lb.	1 40
Pinch Bars, 5½ ft., 24 lb.	1 60

BARS, WRECKING.

V. & B. No. 12	$0 34
V. & B. No. 24	0 43
V. & B. No. 324	0 57
V. & B. No. 30	0 48
V. & B. No. 330	0 62

BITS.

All Vaughan and Bushnell.	
Screw Driver, No. 30, each.	$ 27
Screw Driver, No. 1, each.	16
Reamer, No. 30, each	41
Reamer, No. 100, each	41
Countersink, No. 13, each	20
Countersink, Nos. 14-15, each	27

BLADES, SAW.

Wood.			
Atkins 30-in. Nos.	6	40	26
	$8 90	$9 45	$5 40

BLOCKS.

Wooden	45%
Patent	45%

BLOW TORCHES (See Firepots).

BOARDS.

	Per Doz.
Stove.	
Crystal, 33"	$23 90
Wash.	
No. 760, Banner Globe (single) ..... per doz.	$5 25
No. 652, Banner Globe (single) ..... per doz.	6 75
No. 801, Brass King, ... per doz.	3 25
No. 860, Single—Plain Pump	6 25

BOLTS.

Carriage.	
Small, roll thread	50 & 10%
Small and Large cut thread	50%
Machine.	
Small, roll thread	60 & 5%
Small, cut thread	50 & 10 & 5%
Large, cut thread	50 & 10 & 5%
Stove	70 & 10 & 5%

BRACES, RATCHET.

V. & B. No. 444 8 in.	$4 54
V. & B. No. 222 8 in.	3 89
V. & B. No. 111 8 in.	3 55
V. & B. No. 11 8 in.	3 02

BRUSHES.

Hot Air Pipe Cleaning.	
Bristle, with handle, each.	$0 85
Flue Cleaning.	
Steel Only, each	$1 25

BURRS.

Copper Burrs only	40-10%

BUTTS.

Steel, antique copper or dull brass finish—case lots— 3½x3½—per dozen pairs	$3 12
4x4 " " "	4 40
Heavy Bevel steel inside sets, case lots— ..... per dozen sets	7 80
Steel bit keyed front door sets, each	1 90
Wrought brass bit keyed front door sets, each	3 25
Cylinder front door sets, each	7 50

CEMENT, FURNACE.

American Seal, 5 lb. cans, net	$ 45
" " 50-lb. cans, "	90
" " 25 lb. cans, "	2 00
Asbestos, 5 lb. cans, net	45
Pecora ..... per 100 lbs.	7 51

CHAINS.

⅜ in. proof coil chain per 100 lbs.	$8 25
American coil chain	40 & 10%

CHIMNEY TOPS.

Iwan's Complete Rev. & Vent.	30%
Iwan's Iron Mountain only	35%
Standard	30 to 40%

CHISELS.

Cold.	
V. & B. No. 25, ¼ in., each	$0 26
V. & B. No. 25, ⅝ in., each	41
Diamond Point.	
V. & B. No. 55, ¼ in.	0 31
V. & B. No. 55, ½ in.	0 48
Firmer Bevelled.	
Round Nose.	
V. & B. No. 65, ¼ in.	0 29
V. & B. No. 65, ½ in.	0 40
Socket Firmer.	
Cape.	
V. & B. No. 50, ⅜ in.	0 31
V. & B. No. 50, ¾ in.	0 57

CHUCKS, DRILL.

Goodell's, for Goodell's Screw Drivers ..... List less	35-40%
Yankee, for Yankee Screw Drivers	$6 00

CLAMPS.

Adjustable.	
No. 100, Door (Stearns) doz.	$22 00
Carpenters'.	
Steel Bar..List price plus.	20%
Hose.	
Sherman's brass, ¾-inch per doz.	$0 48
Double, brass, ¾-inch, per doz.	1 20

CLINKER TONGS.

Front Rank, each	$1 75
Per doz.	18 00

CLIPS.

Damper.	
Acme, with tail pieces, per doz.	$1 35
Non Rivet tail pieces, per doz.	35

COPPERS—Soldering.

Pointed Roofing.

3 lb. and heavier ..... per lb.	48c
2½ lb. ..... "	45c
2 lb. ..... "	43c
1½ lb. ..... "	55c
1 lb. ..... "	60c

CORD.

No. 7 Std. per doz. banks	$11 00
No. 8 " " " "	12 00

CORNICE BRAKES.

Chicago Steel Bending.	
Nos. 1 to 6 B.	10%

COUPLING HOSE.

Brass ..... per doz.	$3 30

CUT-OFFS.

Kuehn's Korrekt Kutoffs: Galv., plain, round or cor. rd	
Standard gauge	40%
26 gauge	10%

DAMPERS.

"Yankee" Hot Air.	
7 inch, each 20c, doz.	$1 75
8 " " 25c, "	2 40
9 " " 30c, "	2 75
10 " " 32c, "	3 00
Smoke Pipe.	
7 inch, each	$ 35
8 " "	40
9 " "	50
10 " "	60
12 " "	90
Reversible Check.	
8 inch, each	$1 50
9 " "	1 70

DIGGERS.

Post Hole.	
Iwan's Split Handle (Eureka)	
4-ft. Handle ..... per doz.	$14 00
7-ft. Handle ..... per doz.	36 00
Iwan's Hercules pattern, per doz.	14 00

DRILLS.

V. & B. Star, 12-inch Length.	
¼, 5/16 and ⅜, each	$ 28
⅝, each	36
1, each	54
1¼, each	81
V. & B. Star, 18-inch Length.	
5/16 and ⅜, each	$ 33
⅝, each	46
1, each	69
1¼, each	1 05

EAVES TROUGH.

Milcor	
Galv. Crimpedge, crated	75%

ELBOWS—Conductor Pipe.

Milcor	
Galv., plain or corrugated, round flat	
Crimp, Std. gauge	45%
26 Gauge	40%
24 Gauge	10%
Square Corrugated.	
Milcor	
Standard gauge	50%
26 gauge	30%
Portico Elbows.	
Standard Gauge Conductor Pipe, plain or corrugated.	
Not nested	70 & 5%
Nested solid	70 & 5%

ELBOWS—Stove Pipe.

1-piece Corrugated. Uniform.	Doz.
5-inch	$1 40
6-inch	1 50
7-inch	2 00
Special Corrugated.	Doz.
6-inch	$1 35
7-inch	1 65

Industrial Unevenness Marks Opening of March—Production and Distribution Increase Over 1923.

Longworth Compromise Tax Reduction Measure Passes House—Non-Ferrous Metal Prices Continue Advancing—Lead Scarce.

AS THE tax reduction measure, passed last week by the House of Representatives under the Longworth compromise, goes to the Senate Finance Committee, administration forces in the Senate are preparing to devote a large part of their energies to defending the measure as it stands against further attack, realizing that little hope exists of lowering the surtax maximum below 37½ per cent.

The unfortunate Washington disclosures have failed to affect business conditions materially, which continue in a cheerful mood.

The large production and shipments of goods as shown by a record freight movement, and the continued disinclination of consumers to buy into the future at present prices are further indications of continued good business.

The iron and steel trade continues busy, with production in the case of the U. S. Steel Corporation about 93 per cent of capacity and independents about 82 per cent, demand for railroad equipment being very heavy.

The non-ferrous metal trade continues under the influence of a speculative movement in London which has increased in intensity this week. Remembering what happened late last spring, our consumers and traders are inclined to be conservative and to "watch their step."

Copper.

In the outside copper market business was dull and the market less strong in sympathy with developments at home and abroad in delivered positions.

Prices, however, were without essential change. Electrolytic is nominally held at 13.87½ cents f. o. b. refinery for prompt, March and April shipment, 14 cents refinery for May and full second quarter shipment. Temporarily little interest was shown in third quarter position. Lake copper remained dull at 14.12½ cents delivered and casting copper was slow at 13.62½ cents f. o. b. refinery.

Chicago sheet base price is 21½ cents.

Tin.

The tin market has been fairly active at New York on transactions between dealers.

At the first call on the New York Metal Exchange, Straits tin for May delivery was sold at 55.50 cents and shipments from the Straits at 55.37½ cents to 55.50 cents. At the second call 25 tons February-March were sold at 55.50 cents.

In the outside market there have been several transactions in March tin at 55.60 cents to 55.62½ cents, with more buyers than sellers at this price.

American consumers still continue to buy sparingly.

Chicago tin quotations are: pig, 61.00 cents; bar, 62.00 cents.

Zinc.

Zinc prices sagged in the absence of good domestic interest or of export buying to 6.75 cents, East St. Louis, for prompt, March and April shipments.

High grade zinc prices recently were advanced to 8.50 cents to 8.75 cents, delivered. Brass special premiums have narrowed to about 5 points over prime western.

Some buying for German account was reported done about a week ago.

Chicago sheet prices in cask lots, 11.75 cents; less than cask, 12.25 cents.

Lead.

There are rather more liberal offerings of March and April lead, particularly in the New York district, and less immediate urgency in buyers' needs.

Supplies for prompt in the Middle West show little, if any, increase, but even there, where the demand has been strongest, it is less keen than it has been, and bids from middlemen for April and May lead are being sought.

While the volume of consumption is undiminished, it is evident that there is disposition towards profit-taking, and greater conservatism on the part of buyers.

Chicago lead quotations are: American pig, 10.75 cents; bar, 11.75 cents.

Solder.

Chicago warehouse prices on solder are as follows: Warranted, 50-50, $36.00; Commercial, 45-55, $34.50, and Plumbers', $34.00, all per 100 pounds.

Bolts and Nuts.

In the past few days the Chicago demand for bolts and nuts has receded slightly, but this is due more to the fact that users have been buying heavily and anticipating their requirements than to recession in manufacturing lines using these products. Producers are beginning to solicit second quarter business actively.

Although 60 and 5 off for large machine bolts is quoted by some manufacturers, the ruling quotation continues 60 and 10 off.

Wire and Nails.

In the experience of wire products manufacturers the Pittsburgh demand is greatest for the heavier gages of smooth black wire. Bolt and rivet makers are among the buyers.

A steady demand exists for nails, particularly for sizes used in construction. Numerous mixed carloads are on order and shipments are being accepted readily by jobbers.

Fencing and staples are being ordered against spring demand. While

Uniform, Collar Adjustable.

	Doz.
5-inch	$2 00
6-inch	2 10
7-inch	2 60

WOOD FACES—50% off list.

FENCE.

Field Fence	60½%
Lawn "	53%

FILES AND RASPS.

Heller's (American)	60-5%
American	65-5%
Arcade	50-10%
Black Diamond	50-5%
Eagle	50-10%
Great Western	50-10%
Kearney & Foot	50-10%
McClellan	50-10%
Nicholson	50-10%
Simonds	60%

FIRE POTS.

Ashton Mfg. Co.
Complete line Firepots and Torches....52%

Otto Bernz Co.

No. 1 Furn. Gasolene with large shield, 1 gal.	$ 6 75
No. B Furn. Kerosene, 1 gal.	15 12
No. 10 Brazier, Kerosene or Gasolene, 10 gals.	47 52
No. 5 Torch, Gasolene or Kerosene, 1 pt.	7 92
No. 83 Torch, Gasolene, 1 quart	5 40
No. 86 Torch, Gasolene, 1 pt.	4 05

Clayton & Lambert's.
East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas 52%
West of above boundary line..48%

Geo. W. Diener Mfg. Co.

	Ea.
No. 02 Gasolene Torch, 1 qt.	$ 5 55
No. 0250, Kerosene or Gasolene Torch, 1 qt.	7 50
No. 10 Tinners' Furn. Square tank, 1 gal.	12 60
No. 15 Tinners' Furn. Round tank, 1 gal.	12 00
No. 21 Gas Soldering Furnace	3 60
No. 110 Automatic Gas Soldering Furnace	10 50

Double Blast Mfg. Co.
Gasolene, Nos. 25 and 35...60%

Quick Meal Stove Co.
Vesuvius, F.O.B. St. Louis 30%
(Extra Disct. for large quantities)

Chas. A. Hones, Inc.

Buzzer No. 1	$ 9 00
" " 2	12 00
" " 22	13 50
" " 42	15 00
" " 43	19 00

FREEZERS—ICE CREAM.

Peerless and Alaska

1 quart	$2 95
2 quart	3 45
3 quart	4 10

White Mountain

1 quart	$4 85
2 quart	5 65

GALVANIZED WARE.

Pails (Competition), 8 qt.	$1 85
10-qt.	2 10
12-qt.	2 30
14-qt.	2 57
Wash tubs, No. 1	$6 25
No. 2	7 00
No. 3	8 25

GARAGE DOOR HARDWARE.

Stanley ....All net

GAUGES.

Marking, Mortise, etc. ....Nets

Wire.
Disston's 25%

GIMLETS.

Discount ....65% and 10%

GLASS.

Single Strength, A and B, all sizes ....83 & 85%
Double Strength, A, all sizes 84%

GREASE, AXLE.

Frazers'

1-lb. tins, 36 to case, per case	$ 4 70
3-lb. tins, 24 to case, per case	7 80
5-lb. tins, 12 to case per case	7 20
10-lb. tins, per dozen	10 40
15-lb. tins, per dozen	13 80
25-lb. tins, per dozen	19 80

HAMMERS, HANDLED.

All V. and B.	Each, net
Blacksmiths' Hand, No. 0, 26-oz.	$1 00
Engineers' No. 1, 26 oz.	1 00
Farrier's, No. 7, 7-oz.	93
Machinists', No. 1, 7-oz.	78

Nail.

Vanadium, No. 41, 20-oz. each	1 59
Vanadium, No. 41½, 16-oz. each	1 59
V. & B., No. 11½, 16-oz., each	1 01
Garden City, No. 111½, 16-oz., each	75
Tinner's Riveting, No. 1, 8-oz., each	79
Shoe, Steel, No. 1, 18-oz., each	65

Tack.
Magnetic.
No. 5, 4-oz., each 81

HAMMERS, HEAVY.

Farrier's, No. 10, 10-oz. ...$1 01

HANDLES.

Axe. Hickory, No. 1....per doz.	4 00
Hickory, No. 2.... "	3 00
1st quality, second growth	6 00
Special white, 2nd growth	5 00
Chisel. Hickory, Tanged, Firmer assorted .....per doz.	55c
Hickory, Socket, Firmer, Assorted .....per doz.	70c
File .....per doz.	$1 20
Hammer and Hatchet. No. 1 per doz.	$0 90
Second Growth hickory, per doz.	1 50
Soldering. Per doz.	$2 40

HANGERS.

Conductor Pipe.
Milcor Perfection Wire....25%

Eaves Trough.

Steel hangers	30%
Triple Twist wire	10%
Milcor Eclipse Wire	20%
Milcor Triplex Wire	15%
Milcor Milwaukee Extension	15%
Milcor Steel (galv. after forming) List plus	12½%
Milcor Selflock E. T. Wire, List plus	40%

HASPS.

Hinge, Wrought, with staples. Net

HATCHETS.

V. and B. Supersteel.	Each
Broad, No. 1, 24-oz.	$1 43
Half, No. 1, 15-oz.	1 25
Half, No. 3, 27-oz.	1 37
Claw, No. 1, 19-oz.	1 31
Flooring, No. 1, 20-oz.	1 43
Shingling, No. 1, 17-oz.	1 20
Lathing, No. 1, 14-oz.	1 20
Lathing, No. 2, 17-oz.	1 25
Vanadium Steel. Half, No. 62, 22-oz.	$1 82
Underhill Patterx Lathing, 9 row, 19 oz.	2 29

HINGES.

Heavy Strap, in Bundles.

4 inch, dozen prs.	$1 12
5 " " "	1 57
6 " " "	1 93
8 " " "	3 21

Extra Heavy T in Bundles.

4 inch, dozen prs.	$1 74
5 " " "	1 86
6 " " "	2 31
8 " " "	3 95

HOES.

Garden ....Net

HOOKS.

Box. V. and B. No. 9, each	$0 26
Conductor. Milcor	
"Direct Drive" Wrought Iron for wood or brick	15%
Cotton. V. and B. No. 8, each	24
Hay. V. and B. No. 1, each	26
Bar Meat. V. and B. No. 26, ⅜", each	09
V. and B. No. 28, ½", each	16
Screw Meat. V. and B. No. 2, per gro.	6 50
Butchers' "S." V. and B. No. 6, each	08
V. and B. No. 8, each	11

HOSE.

	Per Ft.
⅝-in. 2 ply molded	9½c to 12¾c
¾-in. cord	8½c to 10c
¾-in. wrapped	13½c

HUMIDIFIERS.

"Front-Rank," Automatic.
In single lots 50%
In lots of 10 or more....50-5%
In lots of 25 or more..50-10%
Vapor pans, etc., each.....50%

IRONS.

Sad.

Genuine Mrs. Potts, nickel plated, per set	$1 55
Asbestos No. 70, per set.	2 10
Asbestos No. 100, per set.	2 30

E. C. Stearns'.

No. OA Corner, doz. sets.	$2 50
No. OB " " "	2 75

KNIVES.

Butcher.
Beechwood Handles, 6-inch blade 25%
Beechwood Handles, 7-inch blade 25%
Beechwood Handles, 3-inch blade 25%

Cooper's Hoop 25%

Drawing.
Standard 25%
Adjustable 25%
Barton's Carpenters' 25%

Hay.
Iwan's Solid Socket....25%
Heath's 25%
Iwan's Sickle Edge 25%
Iwan's Imp'd Serrated....25%

Hedge.
Challenge 25%
Disston's No. 1 ....25%

Putty.
Common 25%
Lander's 25%

Scraping.
Beech Handles 25%
Lander's 25%

KNOBS.

Door.

Mineral .....per doz.	$2 00
Porcelain ..... "	2 00
Jet ..... "	2 00

LADDERS.

Step.
Common, per ft. 28c
Common, with Shelf, add 10c
IXL 34c
Challenge, 6 to 9 ft....55c
10 to 16 ft. 60c
Kant-Break, per lineal ft...75c

LANTERNS.

	Per doz.
Monarch tin, hot blast	$ 8 25
Dietz No. 2 cold blast	13 00
Best tubular	8 25
Competition lanterns No. 0 tubular	6 90

LAWN MOWERS.

12-inch	$5 20
16-inch	5 85

Ball Bearing.
4 blade, adjustable bearing.

14"	$5 20
16"	7 80

LEATHER BELTING.

From No. 1 Oak Tanned Butts.
Extra heavy, 18-oz....35%
Heavy, 16-oz. 40%
Medium, 14½-oz. 40%
Light, 13-oz. 50%

LEATHER LACING.

Cut, strictly No. 1....45%

LEVELS.

Disston, No. 28 Asst.	$22 05
" No. 18, 20 in., each	1 83
" No. 22, 24 in., each	2 40
" Shafting, 6 in.	19 80
" " 6 in. gr. glass	24 20
" No. 1 Asst.	5 75
" No. 2 Asst.	12 40
" 24-26 in., each	1 02
" 28-30 in., each	1 00

LIFTERS.

Stove Cover.

Coppered .....per gro.	$6 00
Alaska ..... "	4 75

LOCKS.

Barn Door.

No. 60 Stearn's..per doz.	$11 00
No. 80 " "	20 00

MALLETS.

Carpenters'.

Fibre Head No. 2, per doz.	$12 00
" No. 3, "	15 50
" No. 3½, "	20 50
Round Hickory, per .....doz.	$3 00— 5 00

Tinners'.
Hickory .....per doz. $2 25

MATS.

Door.
National Rigid.....5 & 10 & 5%
Acme Steel Flexible.....50%

MITRES.

Galvanized steel mitres, and caps, end pieces, outlets...30%
Milcor .....
Galv. one piece stamped.....40%

MOPS.

Cotton, Star (Cut Ends).

Pounds	12'	15'	18'	24'-3-oz.
Per doz.	$4 00	4 35	5 50	7 00

Enterprise 16⅔%
Parker ....50 & 5%

NAILS.

Cut Steel	$4 70
Cut Iron	4 70
Wire. Common	3 80
Cement Coated	3 25

NETTING, POULTRY.

Galvanized before weaving 45-10%
Galvanized after weaving 45%

NIPPERS.

Nail Cutting.
V. & B. No. 30....73c
Double Duty.
V. & B. No. 60....76c
Hoof.
Heller's ....40 & 10%
V. & B. No. 52, each....$2 25

NOZZLES.

Hose.

Diamond ..... "	5 75
Magic .....per doz.	$9 50

OILERS.

Chase Pattern.
Brass and Copper....10%
Zinc Plated ....40 & 5%

Railroad.
Brass ....20 & 5%
Coppered ....50 & 5%

Steel.
Copper Plated ....70 & 5%

OPENERS.

Delmonico .....per doz.	$1 30
Never Slip ..... "	60

Crate.
V. & B.. per doz. $7 25—11 00

there are some reports of prices below 2.60 cents on cement-coated nails, these are not credited and 2.60 cents to 2.70 cents represents the quotable market, some refusing to go below the maximum.

Plain wire is quoted at 2.75 cents and wire nails are unchanged at 3.00 cents, base Pittsburgh.

Sheets.

The sheet market, taken as a whole, is moderately steady in the matter of prices. Price is largely a matter of service and clientele, some mills, and particularly new sellers, having to make slight price allowances in order to get what they consider is their share of the business. This has been a feature of the sheet trade for many years. Many of the mills now considered old mills, and mills that are very strict about prices, originally paid their way into the trade just as newcomers have since done.

In black and galvanized quotations on the market are at a range of 3.75 cents to 3.85c on black and 4.90 cents to 5.00 cents on galvanized. There do not seem to be many irregularities in blue annealed sheets, not enough to justify quoting the regular market at anything but 3.00 cents, while in automobile sheets there are no reports of shading at all from the regular 5.35 cent price. In all four lines, however, deliveries are being made in not a few cases at less than full prices, these deliveries being against old sales, made largely in December.

In connection with fresh cases of shading that have developed since January 1st, accompanied by the experience of some mills withdrawing their concessions, it is no secret that some observers have come to doubt whether there has been in the sheet trade as much interchange of price information as used to be popularly supposed.

Tin Plate.

The tin plate producing industry has continued to enjoy very good operating conditions.

The weather has been quite favorable, particularly so for this time of year. There has been an adequate supply of labor, though there is nothing to spare in that respect and it requires care to maintain full operating forces.

Labor is fairly efficient, the efficiency making a favorable comparison with conditions in any year since 1915. There has been an ample supply of steel, the matter of steel giving the mills no concern.

The regular domestic market remains firm at $5.50. Small lots for prompt shipment may command premiums, and it is not entirely improbable that in a few weeks premiums will begin to rule on larger lots.

There is quite a fair export inquiry from week to week, inquiries running of fair size individually, the number of boxes occasionally running into five figures. Quotations on export business run very close to the domestic price and it is quite possible that above $5.50 will eventually be obtained. The Welsh mills have been quite well filled of late for early deliveries, giving the American mills more opportunity than they had two or three months ago.

Old Metals.

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, $19.50 to $20.50; old iron axles, $27.00 to $27.50; steel springs, $22.50 to $23.00; No. 1 wrought iron, $15.00 to $15.50; No. 1 cast, $19.00 to $19.50, all per net tons. Prices for non-ferrous metals are quoted as follows, per pounds: Light copper, 9 cents; light brass, 6 cents; lead, 6 cents; zinc, 4 cents, and cast aluminum, 17¼ cents.

Lull Experienced in Pig Iron Market; February Output Largest Since October.

Additional Business Expected at Chicago from Heavy Buying of Railroad Equipment—No. 2 Foundry at $24.50.

PIG iron production in February for the first time since October rose above the 100,000-ton daily mark, and despite the shorter month, showed a gross gain of more than 50,000 tons over January.

The average daily production in February was 105,673 tons and the total 3,064,536 tons, compared with 97,273 and 3,015,480 tons, respectively, in January.

Production in February was at the annual rate of over 38,500,000 tons annually, which represents 85 per cent of the historic record established last May. Furnaces blowing at the end of February numbered 262, a gain of 14 over January and 31 over December.

The pig iron market at Pittsburgh is exceedingly dull, practically devoid of sales and inquiries.

One valley merchant producer is taking 1,000 tons at $22.50, valley, a decline of 50 cents.

A middle interest has placed 500 tons and steel companies similar amounts at $22.50, valley basis.

No. 2 foundry is maintained at $23, valley minimum. One sale of 2,500 tons to a regular customer was made on that basis last week. Other lots, below 500 tons, have since been sold at the same basis.

Heavy buying of railroad equipment, for which equipment makers have not yet purchased pig iron, and an increasing melt by gray iron and malleable foundries are expected by sellers to bring out additional business.

Inquiries and sales generally are of moderate size, but a good portion of second quarter output already is spoken for.

It is understood that in the past few weeks a number of the larger melters placed second quarter requirements. In some cases these needs extend into the third quarter.

Northern foundry and malleable are firm at $24.50, furnace. Less talk is heard of an increase to $25. It is reported some southern iron still is available at $23, Birmingham, but the general quotation is $23.50.

PAILS.

Cream.
14-qt. with gauge, ... per doz. $9 50
18-qt. without gauge, ... per doz. 11 00
20-qt. without gauge, ... per doz. 11 75

Sap.
10-qt., IC Tin....per doz. $4 00
12- " " " " 5 50

Stock.

Galv. qts.	14	16	18	20
Per doz.	$9 75	10 75	12 75	14 50

Water.

Galvanized qts.	10	12	14
Per doz.	$5 75	6 50	7 25

PASTE.

Asbestos Dry Paste:
200-lb. barrel $15 00
100-lb. barrel 8 00
25-lb. pail 3 25
10-lb. bag 1 00
5-lb. bag 55
2½-lb. cartons 30

PINCERS.

All V. & B.
Carpenters', cast steel, No. ... 6 8 10 12
Each $0 43 $0 52 $0 61 $0 71
Blacksmiths', No. 10.....$0 64

PIPE.

Conductor

"Interlock" Galvanized.
Crated and nested (all gauges) 60-20%
Crated and not nested (all gauges) 60-15%

Square Corrugated A and B and Octagon.
29 Gauge 60-10%
28 " 60-10%
26 " 60-10%
24 " 60-10%

"Interlock."
Crated and nested (all gauges 60-20%

Prices for Galvanized Toncan Metal, Genuine O. H. Iron, Lyonmere Metal and Keystone C. B. on application.

Stove.	Per 100 joints
26 gauge, 6 inch E. C. nested	17 00
26 gauge, 7 inch E. C. nested	19 00
28 gauge, 5 inch E. C. nested	14 00
28 gauge, 6 inch E. C. nested	15 00
28 gauge, 7 inch E. C. nested	17 00
30 gauge, 5 inch E. C. nested	12 00
30 gauge, 6 inch E. C. nested	13 00
30 gauge, 7 inch E. C. nested	15 00

T-Joint Made up,
6-inch, 28 ga. ...per 100 32 50

Furnace Pipe.
Double Wall Pipe and Fittings 40-10%
Single Wall Pipe, Round Pipe Fittings 40-10%
Galvanized and Black Iron Pipe, Shoes, etc..40-10%
Milcor Galvanized 40%

PLANES.

Stanley Iron Bench.....Net

PLIERS.

(V. & B.)
Nut, No. 3, each.....$2 60
" No. 5, each..... 64
" No. 25, each..... 69

Gas, No. 7, each..... 55
" No. 8, each..... 61
" No. 12, each..... 87

Lining or Crimping.
No. 25, each 64

Button's Pattern.
No. 6 each..... 61
No. 8 each..... 74

Double Duty, No. 106..... 50

POINTS, GLAZIERS'.

No. 1, 2 and 3..per doz. pkgs. 65c

POKERS, STOVE.

Wr't Steel, str't or bent, ...per doz. $0 75
Nickel Plated, coil handles ..... " 1 10

POKERS, FURNACE.

Each $0 50

PULLEYS.

Furnace Tackle....per doz. $0 60
per gross 6 00
" Screw (encased)....per doz. $0 85

Ventilating Register.
Per gross $9 00
Small, per pair..... 0 30
Large, per pair..... 0 50

PUNCHES.

Machine.	Each
V. & B., No. 11-13, 1½x6..$0 19	
V. & B., No. 90, ⅝x9.....	27
V. & B., No. 10, ⅝x10....	29
V. & B., No. 1-6, ½x6.....	12

Center.
V. & B., No. 50, ⅝x4.....$0 14

Belt.
V. & B., No. 101-103.....$0 24
V. & B. No. 25, ass't..... 3 80
V. & B., No. 25, ass't..... 3 80

Samson Line.
No. 1 Hand { Doz. lots or less 40%
No. 2 Hand { 3 doz. lots ...Less 40 & 5%
No. 4 Hand { 6 doz. lots or more ..Less 50%
No. 3 Bench { Less than doz. lots... Less 25%; Doz. lots or more...Less 40%

Extra Punches and Dies for Samson:
No. 1 Hand { Less than doz. lots...Less 25%
No. 2 Hand { Doz. lots, ...Less 33⅓%
No. 4 Hand { 3 doz. lots, ...Less 40%
No. 3 Bench { 6 doz. lots or more, ..Less 40 & 10%

PUTTY.

Commercial Putty, 100-lb. kits $3 55

QUADRANTS.

Malleable Iron Damper.....10%

FLOOR REGISTERS AND BORDERS.

Cast Iron 25%
Steel and Semi-Steel.....40%
Baseboard 40%
Adjustable Ceiling Ventilators 40%

Register Faces—Cast and Steel
Japanned, Bronzed and Plated, 4x6 to 14x14.....40%
Large Register Faces—Cast, 14x14 to 38x42.....60%
Large Register Faces—Steel, 14x14 to 38x42.....65%

ROOFING.

	Per Square
Best grade, slate surf. prep'd	$1 35
Best talc surfaced	2 20
Medium talc surfaced	1 50
Light talc surfaced	95
Red Rosin Sheeting, per ton	$72 00

ROPE.

Cotton.

Sisal.
1st Quality, base.....13½c
No. 2 .....12½c

Manila.
1st Quality standard brands 15½c
No. 2 .....14½c
Hardware Grade, per lb....12½c

SAWS.

Butchers'.
Atkins No. 2, 14-in.....$12 75
" No. 2, 18-in..... 14 30
" No. 7, 16-in..... 15 85
" No. 2, 22-in..... 15 92
" No. 7, 20-in..... 18 05
" No. 7, 24-in..... 20 20
" No. 7, 28-in..... 22 35

Compass.
Atkins No. 2, 10-in.....$ 5 45
" No. 10, 10-in..... 5 60
" Blades, No. 2, 10-in 3 25
" " No. 2, 10-in. 3 30

Cross-Cut.
Atkins No. 221, 4-ft.....$3 03
" No. 221, 6-ft..... 4 45
" No. 221, 8-ft..... 6 07

Hand.
Copper Burrs only.....30%
" No. 96, 20-in..... 21 70

Hand and Rip.
Atkins No. 54, 20-in.....$19 50
" No. 54, 26-in..... 24 40
" No. 53, 16-in..... 18 10
" No. 53, 20-in..... 22 90
" No. 53, 24-in..... 26 60
" No. 53, 28-in..... 31 45
" No. 53, 30-in..... 34 15

Keyhole.
Atkins No. 1 complete.....$3 10
" No. 2 complete..... 3 70

Miter Box.
Atkins No. 1, 4x20.....$32 65
" No. 1, 5x22..... 38 00
" No. 1, 6x22..... 42 20

Pruning.
Atkins No. 20, 12-in.....$ 8 45
" No. 10, 16-in..... 18 15

Wood.
Atkins No. 202.....$ 7 19
" No. 318..... 8 75
" No. 906..... 15 50
" No. 1509..... 16 56

SCRAPERS.

Box.
No. 6, six blades each.....25c

Hog.
No. 6, each 25c

Floor (Stearns).
No. 10, each.....$11 50

SCREEN DOOR HINGES.

Cast Iron .....gross $13 00
Steel ..... " 9 50

SCREWS.

Wood.
F. H. Bright.....80%
R. H. Blued.....78%
F. H. Jap'd.....74%
F. H. Brass.....76%
R. H. Brass.....74%

Sheet Metal.
No. 7, ½x ⅛, per gross$0 55
No. 10, ¾x3/16, per gross 75
No. 14, ⅞x ¼, per gross 90

SCREW DRIVERS.

Uncle Sam Standard Head.
2 inches, each.....$ 45
5 inches, each..... 52
8 inches, each..... 68
12 inches, each..... 1 02

Uncle Sam Insulated Head.
3 inches, each.....$ 49
5 inches, each..... 57
8 inches, each..... 76
12 inches, each..... 1 14

SETS.

Nail.
V. & B.
No. 100, in cardboard boxes .....doz. $1 55
No. 100, in wooden boxes, ... doz. 1 58
No. 30, assorted.....doz. 39
No. 5, in cardboard boxes, ... doz. 1 25
No. 5, in wooden boxes, ... doz. 1 30

Rivet.
V. & B.
Farmers' $0 18
Tinners' 3-4..... 0 40
" 00-0..... 0 80

Saw.
Atkins No. 10....per doz. $3 80
" No. 12.... " 6 30

SHEARS.

Nickel Plated, Straight,	Per Doz.
6"	$12 90
7"	14 85
8"	16 80
Japanned, Straight, 6"	11 90
7"	13 40
8"	13 80

SHEARS, TINNERS' & MACHINISTS'.

Viking $22 00

Lennox Throatless.
No. 18 .....35%
Shear blades 10%
(f.o.b. Marshalltown, Iowa.)

Peerless Steel Squaring. Foot Power.
No. 1—30", 18 ga. cap.....15%
No. 2—36", 18 ga. cap.....15%
No. 4—52", 18 ga. cap.....15%
No. 10—120", 22 ga. cap...15%
No. 4A—52", 16 ga. cap....15%

Cast Iron Foot Power.
No. 01, 30", 18 ga. cap.....15%

Power Driven.
(No. 100 Series, 2 Shaft Drive.)
No. 142—42", 18 ga. cap...15%
(No. 200 Series, 2 Shaft Underneath Drive.)
No. 242—42", 14 ga. cap...15%
(No. 300 Series, 3 Shaft Underneath Drive.)
No. 342—42", 10 ga. cap...15%
No. 372—72", 10 ga. cap...15%
(No. 500 Series, 3 Shaft Underneath Drive.)
No. 596—96", 10 ga. cap...15%
No. 600 Series, 3 Shaft Underneath Drive.)
No. 6120—120", 3/16" cap.15%

SHOES.

Milcor.
Galv. Std. Gauge, Plain or corg. round flat crimp...65%
26 gauge round flat crimp...40%
24 gauge round flat crimp...10%
Conductor 65%

SHOVELS AND SPADES.

Coal.
Hubbard's.

No.	A	B	C	D
1	$16 00	15 10	14 45	13 70
2	16 35	15 60	14 85	14 10
3	16 75	16 00	16 25	14 40
4	17 10	16 35	16 60	14 85

Post Drains & Ditching.
Hubbard's.

Size	A	B	C
14"	$17 15	$16 40	$15 65
16"	17 50	16 75	16 00
18"	17 85	17 10	16 35
20"	18 20	17 45	16 70
22"	18 55	17 80	17 05

Alaska Steel.
D-Handle .....per doz. $3 50
Long Handle ..... " 3 00

SIFTERS.

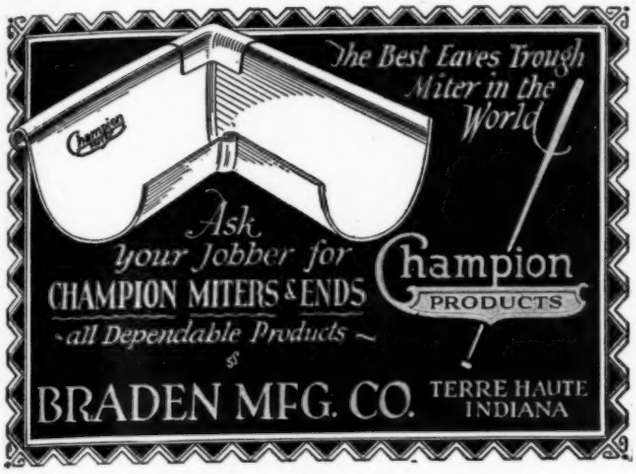
Genuine Hunters, doz.....$2 50

SKATES.

Ice, Men's and Boys'.	Per Pair
Key Clamp—rocker—bright finish	$ 70
Key Clamp—rocker—nickel finish	1 10
Key Clamp—rocker — polsteel	1 30
Key Clamp—rocker — polSkate outfits	4 75

Women's and Girls'.
½" Key Clamp—rocker....$1 31
" " " hockey.. 1 33
Ice Skate outfit..... 5 00

Roller.
Ball Bearing—Boys' $1 45
Ball Bearing—Girls' 1 55



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Write for Prices and Illustrations

Gerock Bros. Mfg. Co.

Sheet Metal Ornaments and STATUARY

1252 So. Vandeventer Ave'

St. Louis, Mo., U. S. A.

Your Standard of Comparison should be

"As Soft as an INLAND SHEET"

INLAND STEEL COMPANY

38 South Dearborn St., Chicago

Works: Indiana Harbor, Ind. Chicago Heights, ILL.

Branch Offices Milwaukee St. Louis St. Paul

VENTILATORS

We carry a full line of the below named well known ventilators:

EARLE	IWAN'S	"ROYAL"
PERFECTION	STANDARD	GLOBE
HERCULES	"STAR"	UNO
AMERICAN-LARSON		"BEST"

We can make prompt shipments on your orders for anything in the sheet metal line.

Try us—write for catalog today

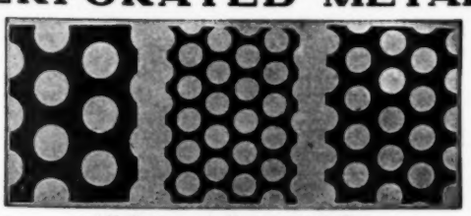
BERGER BROS. CO.

229 to 237 ARCH STREET

WAREROOMS AND FACTORY: 100 TO 114 BREAD STREET

PHILADELPHIA, PA.

PERFORATED METALS



All Sizes and Shapes of Holes

In Steel, Zinc, Brass, Copper, Tinplate, etc.

For All Screening, Ventilating and Draining

EVERYTHING IN PERFORATED METAL

THE HARRINGTON & KING PERFORATING CO.

5649 FILLMORE ST.-CHICAGO, ILL., U. S. A.

NEW YORK OFFICE, 114 LIBERTY ST.

KANT-BREAK LADDER

THAT'S the name of the ladder and also the reason why it can hold the aggregate weight of six men.

A Steel Rod in each rung
A Steel Insert on both edges

of each upright and only the best materials used in its construction.

That's the proof of why they can't break. Let us tell you about the new Patented Kant-Break pendulum self-adjusting hook used on Kant-Break Extension Ladders.

Write today for illustrated ciculars and prices.

KANT-BREAK LADDERS, Inc.

Ninth and Monroe Streets ST. LOUIS, MO.

SNIPS, TINNERS'.

Clover Leaf .....40 & 10%
National .....40 & 10%
Star 50%
Milcor .....Net

SQUARES.

Steel and Iron .....Net
(Add for bluing, $8.00 per doz. net.)
Mitre ..... "
Try ..... "
Try and Bevel ..... "
Try and Mitre ..... "
Fox's .....per doz. $6 00
Winterbottom's 10%

STAPLES.

Blind.
Barbed .....per lb. 21c@22c
Butter, Tub..... " 16@19c
Fence—
Polished .....per 100 lbs. $5 45
Galvanized ... " 6 15
Netting.
Galvanized ..per 100 lbs. $6 54
Wrought.
Wrought Staples, Hasps and Staples, Hasps, Hooks and Staples, and Hooks and Staples .....50 & 10%
Extra heavy 35%

STONES.

Axe.

Hindustan	....per lb.	New Nets
More Grite	..... "	"
Washita	..... "	"

Emery.
No. 126.....per doz. New Nets
Oil Mounted.

Arkansas Hard No. 7	.....per doz.	New Nets
Arkansas Soft	... "	"
Washita No. 717	"	"

Oil—Unmounted.

Arkansas Hard	per lb.	New Nets
Arkansas Soft	"	"
Lily White	..... "	"
Queer Creek	..... "	"
Washita	..... "	"

Scythe.

Black Diamond	per gro	New Nets
Crescent	..... "	"
Green Mountain.	"	"
LaMolle	..... "	"
Extra Quinine bog	..... "	"
Red End	..... "	"

STOPS, BENCH.

No. 10 Morrill pattern .....per doz. $11 00
No. 11 Stearns pattern ..... " 10 00
No. 15 Smith pattern ..... " 7 00

STOPPERS, FLUE.

Common .....per doz $1 10
Gem, No. 1..... " 1 10
Gem, flat, No. 3.... " 1 00

STRETCHERS.

Carpet.

Bullard's	.....per doz.	$3 90
Excelsior	..... "	5 25
Malleable Iron	... "	70
Perfection	..... "	6 30
King	..... "	4 50

Wire.
O. S. Elwood, No. 1 per doz. Nets
O. S. Elwood, No. 2 " "

SWIVELS.

Malleable Iron .....per lb. $0 10
Wrought Steel ....per gro. $4 50

TACKS.

Bill Posters' 6-oz., 25-lb. boxes, per lb.....15c
Upholsterers' 6-oz., 25 lb... boxes, per lb.....15½c

TAPES, MEASURING.

Asses' Skin .....List & 40%

THERMOMETERS.

Tin Case....per doz $0c & $ 1 25
Wood Backs " 2 00 & 12 00
Glass ..... " 12 00

TIES.

Bale.
Less than Carload Lots.....70%

TRAPS.

Mouse and Rat.	Per Gross
Sure Catch Mouse Traps.	$ 2 50
Vim Mouse Traps.....	2 50
Short Stop Mouse Traps.	2 40
Wood Choker Mouse Traps, 4 hole.....	11 25

	Per Doz.
Sure Catch Rat Traps....	$ 0 85
Dead Easy Rat Traps....	0 90

Packed in One Bushel Band Stave Baskets.

	List per Bushel
Sure Catch Mouse Traps (360 Traps)	$ 6 25
Short Stop Mouse Traps (360 Traps)	6 00
Sure Catch Rat Traps (54 Traps)	3 90
Short Stop Rat Traps (54 Traps)	3 75

Assorted Mouse and Rat Traps. List per Bushel.

Sure Catch (216 Mouse Traps and 26 Rat Traps)	$5 65
Short Stop (216 Mouse Traps and 26 Rat Traps)	5 40

TROWELS.

Cement.
Atkins No. 6.....$19 50
" No. 9..... 25 50

TWINE.

White Cotton.
Eureka, 4-ply .....per lb. 30c
Jute.
Cattle Wire — Galvanized catch weight spool, per 3-ply and 6-ply Bale Lots 22½c

VALLEY.

Milcor .....
Galv. formed or roll.....60%

VENTILATORS.

Standard .....30 to 40%

VISES.

No. 700 Hand,				
Inches	4½	5	5½	
Doz.	$11 15	13 00	14 85	
No. 701. In.	4	5	6	
Doz.	$11 15	13 00	16 70	

No. 1, Genuine Wentworth, Noiseless Saw....per doz. 9 25
No. 3, Genuine Wentworth, Noiseless Saw..per doz. 12 75
No. 500, All Steel Folding Saw .....per doz. 16 00

WASHERS.

Over ½ in. barrel lots per 100 lbs. $6 25
Iron and Steel.

In.	5/16	⅜	½	⅝	¾
	10¼c	9¼c	7¾c	7½c	7 2/5c

WEATHER STRIPS.

Metallic Stitched.
½ in., per 100 ft.....$1 80
⅝ in., per 100 ft..... 2 20
Wood and Felt.
⅝ in., per 100 ft.....$1 56
⅞ in., per 100 ft..... 1 56

WEIGHTS.

Hitching per lb. Nets
Sash—f. o. b. Chicago
Smaller lots, per ton....$47 50

WHEEL BARROWS.

Common Wood Tray.....$3 50
Steel Tray 5 50
Steel leg, garden 6 00

WIRE.

Plain annealed wire, No. 8 per 100 lbs. $3 70
Galvanized barb wire, per 100 lbs. 4 10
Wire cloth — Black painted, 12-mesh, per 100 sq. ft.... 2 35
Cattle Wire—galvanized catch weight spool, per 100 lbs. 4 60
Galvanized Hog Wire, 80 rod spool, per spool..... 3 98
Galvanized plain wire, No. 9, per 100 lbs..... 4 15
Stove Pipe, per stone..... 1 10

WOOD FACES.

50% off list.

WRENCHES.

Coes Steel Handle,	6-in...	40-10%
" " "	8-in...	40-10%
" " "	10-in...	40-10%
" " "	12-in...	40-10%
Coes Knife-Handle,	6-in..	40-10%
" " "	8-in..	40-10%
" " "	10-in..	40-10%
" " "	12-in..	40-10%
Coes All Patterns.....		40-10%

WRINGERS.

No. 790, Guarantee	per doz.	$55 50
No. 770, Bicycle	"	52 50
No. 670, Domestic	"	48 50
No. 110, Brighton	"	43 50
No. 750, Guarantee	"	55 50
No. 740, Bicycle	"	52 50
No. 22, Pioneer	"	29 00
No. 2, Superb	"	29 00

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